



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

27154
218

Harvard College Library



THE GIFT OF

FOR THE
GRADUATE SCHOOL OF
BUSINESS ADMINISTRATION

DEPARTMENT OF COMMERCE AND LABOR

BULLETIN

OF THE

BUREAU OF LABOR

U.S. Bureau of labor statistics
Bulletin

VOLUME XVII-1908



WASHINGTON
GOVERNMENT PRINTING OFFICE
1909

N.9

U588

no.78-80

€597 trans.

Calcutta 3/1/24

Mr. F. L.

Excess

15

FP 12/5/29
vsm 16/33+
x

CONTENTS OF VOLUME XVII.

No. 77.—JULY, 1908.

Wages and hours of labor in manufacturing industries, 1890 to 1907:	Page.
Introduction	1-11
Explanation of scope and method	11-16
Explanation of tables	17-24
Table I.—Average wages and hours of labor, 1906 and 1907, by occupations and geographical divisions	25-60
Table II.—Relative wages and hours of labor, 1890 to 1907, by occupations	61-125
Table III.—Relative wages and hours of labor, 1890 to 1907, by industries	126-132
Table IV.—Average wages and hours of labor, 1906 and 1907, in selected occupations, by cities	133-162
Table V.—Average wages and hours of labor, 1906 and 1907, in selected occupations, by States	163-180
Retail prices of food, 1890 to 1907:	
General discussion	181-195
Wholesale and retail prices of food	195-197
Retail prices and cost of living	197-200
Explanation of scope and method	200-210
Explanation of tables	210-214
Table I.—Retail prices of food, 1906 and 1907	215-320
Table II.—Relative retail prices of food, by months, 1905 to 1907	321, 322
Table III.—Relative retail prices of food, 1890 to 1907	323-332
Compensation for injuries of artisans and laborers in the service of the United States	333-335
Cost of living of the working classes in the principal industrial towns of Great Britain:	
Introduction	336, 337
Rents of working-class dwellings	337-341
England and Wales	337-339
Scotland	340
Ireland	340, 341
Retail prices	341-347
England and Wales	342-346
Scotland	346, 347
Ireland	347
Rents and prices combined	348
England and Wales	348
Scotland	348
Ireland	348

III

Cost of living of the working classes in the principal industrial towns of Great Britain—Concluded.

	Page.
Rates of wages.....	349-352
England and Wales.....	349, 350
Scotland.....	351
Ireland.....	352
Relation of rates of wages to rents and prices.....	352, 353
Changes in rents, retail prices, and rates of wages between October, 1905, and October, 1907.....	354

Digest of recent reports of state bureaus of labor statistics:

Minnesota—Tenth Biennial Report, 1905-6: Accidents to labor—Child labor—Railroad switch yards—Labor organizations—Employment bureaus for males—Free public employment bureau.....	355, 356
Missouri—Twenty-eighth Annual Report, 1906: Surplus products, Government land, and land values—Manufacturing industries—Labor organizations—Free employment offices.....	356-358
Wisconsin—Twelfth Biennial Report, 1905-6: The cooperative store in the United States—Manufacturing returns for 1904 and 1905—Free employment offices.....	359-363

Digest of recent foreign statistical publications:

Great Britain:

Statistics of Proceedings under the Workmen's Compensation Acts, 1897 and 1900, and the Employers' Liability Act, 1880, during the year 1906.....	364-369
Compensation for Industrial Diseases.....	369, 370

Decisions of courts affecting labor:

Decisions under statute law.....	371-388
Employers' liability—employment of children—age limit—certificates—negligence (<i>Platt v. Southern Photo Material Co.</i>).....	371, 372
Employers' liability—fellow-servant law—contracts with relief department—release—validity (<i>Atlantic Coast Line R. R. Co. v. Beazley</i>).....	372-377
Employers' liability—railroads—automatic couplers—repair (<i>Missouri Pacific Ry. Co. v. Brinkmeier</i>).....	377, 378
Employers' liability—railroads—automatic couplers—repair (<i>St. Louis and San Francisco R. R. Co. v. Delk</i>).....	378-381
Employment of children—age limit—constitutionality of statute (<i>Bryant v. Skillman Hardware Co.</i>).....	381, 382
Hours of labor of railroad employees—constitutionality of statute—implied repeal of state by federal statute (<i>State v. Northern Pacific Ry. Co.</i>).....	382-384
Payment of wages in scrip—unlawful discrimination—constitutionality of statutes (<i>Union Sawmill Co. v. Felsenthal</i>).....	384-386
Railway relief funds—contracts limiting liability—effect of statute—construction of contract—disability (<i>Sturgiss v. Atlantic Coast Line R. R. Co.</i>).....	386-388
Decisions under common law.....	389-395
Injunction—right to strike—violation of trade agreement—acts of officers of trade unions (<i>Delaware, Lackawanna and Western R. R. Co. v. Switchmen's Union of North America et al.</i>).....	389-392
Labor organizations—collection of fines—conspiracy (<i>Burke v. Fay</i>).....	392, 393
Labor organizations—enforcement of rules—strikes—injunction—parties—open shop (<i>Reynolds v. Davis</i>).....	393-395

Laws of various States relating to labor, enacted since January 1, 1904..... 396-416

CONTENTS.

Industrial accidents, by Frederick L. Hoffman :	Page.
Accident frequency in the United States	417, 418
The problem of accident notification	419
Degree of accidental injury	419-422
Fatal accident frequency in the United States	422
Causes of accidents in the United States	423
Scope of the present discussion	423, 424
Accidents in factories and workshops	424-433
Accidents in the metal trades	424, 425
Accidents in iron and steel manufacture	425, 426
Accidents in the chemical industry	426-428
Accidents in the manufacture of explosives	428, 429
Accidents in the lumber industry	429, 430
Accidents in sawmills	430, 431
Accidents in the textile industries	431, 432
Textile accidents in Rhode Island	432
Textile accidents in Great Britain	432, 433
Accidents in electrical industries	433-436
Accident liability of electricians and linemen	434, 435
Electrical accidents in Great Britain	436
Accidents in mines and quarries	436-444
Accidents in coal mining	437, 438
Accidents in iron mining	438, 439
Accidents in lead and zinc mining	439, 440
Accidents in copper mining	440, 441
Accidents in gold and silver mining	441
Electrical risk in mining	442
Accidents in smelting and refining	442
Accidents in the mineral oil industry	442, 443
Accidents in quarries	443, 444
Accidents in transportation by rail	444-449
Accident liability of railway trainmen	445
Accident liability of switch tenders and flagmen	446
Accident liability of railway mail clerks	446, 447
Specific accident liability in railway service	447-449
The railway accident problem	449
Accidents in transportation by water	449-455
Accidents in navigation	449, 450
Navigation accidents in Great Britain	450-452
Navigation accidents in the United States	452, 453
Accidents at docks and wharves	454
Accidents in the fisheries	454, 455
Accidents in the Life-Saving Service	455, 456
Causes of accidents	456, 457

Industrial accidents, by Frederick L. Hoffman—Concluded.	Page.
The problem of accident prevention.....	457-458
Social aspects of the accident problem	458
Appendix.....	459-465
Mexican labor in the United States, by Victor S. Clark, Ph. D.:	
Introduction	466
The immigrant	466, 467
Source of immigration	468, 469
Method of migration.....	469-474
Distributing centers.....	474, 475
Method of distribution.....	475, 476
Occupations in which Mexicans are employed.....	477-496
Railway laborers	477-482
Farm laborers.....	482-485
Mine laborers	485-493
Lumbering and woodworking	494
Miscellaneous occupations.....	494-496
Character, and comparison with other nationalities.....	496-501
Home life and standard of living	501-504
Emigration and labor efficiency.....	504-506
Social condition of Mexicans in the United States.....	506-511
Sentiment and race prejudice.....	511-513
Some effects in Mexico.....	513-519
Some effects in the United States.....	519-522
Cost of living of the working classes in the principal industrial towns of the German Empire:	
Scope of the investigation	523-525
Rents of working-class dwellings.....	526-530
The German Empire.....	526-529
The German Empire and Great Britain compared	529, 530
Retail prices	531-540
The German Empire.....	531-537
Rents and prices combined.....	536, 537
The German Empire and Great Britain compared.....	537-540
Rates of wages.....	540-545
The German Empire.....	540-543
Relation of rates of wages to rents and prices.....	542, 543
The German Empire and Great Britain compared.....	543-545
Hours of labor.....	545
Summary of conclusions	545, 546
Changes in retail prices and rates of wages between October, 1905, and March, 1908.....	546-548
British Old-Age Pensions Act of 1908	549-552
Digest of recent reports of State bureaus of labor statistics:	
Missouri: Surplus products, Government land, land values, and good roads—Manufacturing industries—Labor organizations—Free employment offices—Prison shops.....	553-556
Rhode Island: The ice industry—Industrial statistics	556-558
Digest of recent foreign statistical publications:	
Bulgaria: Census of manufactures	559-564
Great Britain:	
Report of proceedings under the Conciliation Act, 1896, for the two years ending June 30, 1907.....	565, 566

Digest of recent foreign statistical publications—Concluded.**Great Britain—Concluded.**

	Page.
Report of the departmental committee appointed to consider whether the post-office should provide facilities for insurance under the Workmen's Compensation Acts. 1907	566-568
India: Report of textile factories labor committee on conditions of factory labor in India. 1907	568-571
Italy: Report on strikes and lockouts, 1904	571-574
Russia: Digest of reports of factory inspectors for 1904	574-576

Decisions of courts affecting labor:

Decisions under statute law	577-603
Employer's liability—employment of children in violation of statute—remedies—negligence (<i>Stehle et al. v. Jaeger Automatic Machine Co.</i>)	577, 578
Employers' liability—railroad companies—safety appliance law—delegation of legislative power—construction of statute—duty as to maintenance of prescribed condition (<i>St. Louis, Iron Mountain and Southern Ry. Co. v. Taylor</i>)	578-581
Employers' liability—railroad companies—validity of Federal statute in the District of Columbia—damages (<i>Hyde v. Southern Ry. Co.</i>)	582, 583
Employers' liability—railroad companies—validity of Federal statute in the Territories and the District of Columbia (<i>Atchison, Topeka and Santa Fe Ry. Co. v. Mills</i>)	583, 584
Employment of children—age limit—constitutionality of statute—violation—employment as cause of injury (<i>Starnes v. Albion Mfg. Co.</i>)	584-586
Injunction—strikes—picketing—protection of employees as members of labor organizations—constitutionality of statute—agreements between mine owners—conspiracy—evidence (<i>Goldfield Consolidated Mines Co. v. Goldfield Miners' Union, No. 220, et al.</i>) ..	586-596
Interference with employment—intimidation (<i>State v. McGee</i>)	596, 597
Labor organizations—unincorporated associations as parties—boycotts—attachment for damages (<i>Branson v. Industrial Workers of the World et al.</i>)	597-601
Picketing—use of streets—personal liberty—municipal regulation—constitutionality (<i>City of St. Louis v. Gloner</i>)	601-603
Decisions under common law	603-620
Labor organizations—benefits—construction of by-laws (<i>Donavan v. Friendly Society of Engravers</i>)	603, 604
Labor organizations—boycott—injunction—conspiracy—freedom of speech—remedies (<i>Lindsay & Co. v. Montana Federation of Labor</i>) ..	604-608
Labor organizations—expulsion of members—beneficial associations—forfeiture of policy—acts of third parties—measure of damages (<i>St. Louis Southwestern Ry. Co. of Texas v. Thompson</i>)	608-617
Railway relief association—status—liability of railroad company (<i>Phillips v. St. Louis and San Francisco R. R. Co.</i>)	617-620
Laws of various States relating to labor, enacted since January 1, 1904	621-631
Cumulative index of labor laws and decisions relating thereto	633-640

BULLETIN

OF THE

BUREAU OF LABOR.

No. 78.

WASHINGTON.

SEPTEMBER, 1908.

INDUSTRIAL ACCIDENTS.

BY FREDERICK L. HOFFMAN.

Industrial accidents are casualties occurring chiefly among wage-earners employed in industrial pursuits, this term including all manufacturing and mechanical industries and trade and transportation. A narrow definition limits this class of accidents to factories and workshops, but this seems hardly warranted by the conditions under which the industrial activity of the nation presents itself as a problem in statistical analysis. The scientific definition of the term is, however, of small importance, and the whole subject is practically comprehended in the term "dangerous trades," which implies that the risk, or liability to accident or injury, is because of personal exposure more or less inseparable from the employment.

ACCIDENT FREQUENCY IN THE UNITED STATES.

Thus far no national investigation of the subject of industrial accidents has been made to determine the true accident risk in industry, and the statistical data extant are more or less fragmentary and of only approximate value. The ever increasing legislation for the protection of life and health in industry and the demand for more stringent employers' liability legislation emphasize the need of a more careful consideration of the facts by selected industries than has thus far been possible. In an article on the subject, contributed to the "New Encyclopedia of Social Reform" (1908), it was estimated by the writer that the number of accidents among men em-

ployed in manufacturing industries for 1906 was 208,300, of which number about 5,000 were fatal and the remainder more or less serious. This estimate, however, was exclusive of accidents in mines and quarries, transportation by land and sea, and all general employments.

For the purpose of arriving at an estimate of the total number of fatal accidents occurring annually among occupied males in the United States at the present time the percentage of occupied males 15 years of age or over is assumed to be the same as at the census of 1900, namely, 30.005 per cent of the total population. The total population of the United States on June 1, 1908, was estimated by the Bureau of the Census to be 86,895,359, and 30.005 per cent of this total, or 26,072,952, represents approximately the number of occupied males 15 years of age or over at that date. The degree of fatal accident frequency (inclusive of homicides, but exclusive of suicides) among occupied males 10 years of age or over was returned by the census of 1900 as 1.13 per 1,000 in the registration States, and in the absence of other data relating to this subject this proportion is considered to represent approximately the accident frequency among all occupied males 15 years of age or over in the United States.^(*) By applying this ratio to the total above estimated (26,072,952) it is found that the number of fatal accidents among occupied males 15 years of age or over is approximately 29,462 in 1908. If allowance, however, is made for the probably higher degree of fatal accident frequency in the western portion of the United States, on account of dangerous mining and lumbering industries, the actual number of fatal accidents among occupied males in 1908 is probably somewhere between 30,000 and 35,000. This estimate of the total accident mortality for 1908 of adult males in gainful occupations is the best possible at the present time, and, while there are no very conclusive trade mortality statistics for this country which sufficiently discriminate between accidents which are the result of general conditions and those which are the direct result of the employment, it is probably safe to estimate that half of the accidents are more or less the immediate result of dangerous industries or trades.

* The number of deaths from accidents among occupied males in the registration States is not given separately for those 15 years of age or over or for those 10 to 14 years of age, inclusive. While the fatal accident frequency in the latter group is probably lower than among adults, the number of occupied males from 10 to 14 years of age represents but a small proportion of all occupied males (only 3.7 per cent for the United States, according to figures shown in the census report on Occupations for 1900); hence it is concluded that the fatal accident frequency among occupied males 15 years of age or over approximates very closely to that among those 10 years of age or over.

THE PROBLEM OF ACCIDENT NOTIFICATION.

It has been pointed out in a report of a British departmental committee, appointed to inquire into the notification of industrial accidents that the term "accident" in itself conveys no exact significance. "Accidents," it is said, "gradually shade off into what are not accidents in the ordinary sense of the word, and there is no hard or fast line which determines when a bruise or a cut, for instance, becomes an accident. A distinguishing line can only be drawn artificially by fixing some kind of standard, as has been done by Parliament in every case in which it has imposed upon employers the obligation to report, and it is clear that unless some line is drawn the application of the system will be left to uncertainty, and uniformity in the administration of the act will be rendered impossible." It is evident that some such definition is imperative to avoid misleading conclusions. There is not so much difficulty in the reporting of fatal accidents since most of the deaths, as a rule, occur at the time of the happening of the accident, or very shortly thereafter. The real difficulty lies in an exact definition of nonfatal accidents, which, as such, "gradually shade off into what are not accidents," which leaves a large amount of necessary discretion with those who are by law required to report them. Since the conditions vary considerably with different industries, an exact or trustworthy comparison of the nonfatal accident ratio in one industry often can not be made with the corresponding return of nonfatal accidents in some other industry. This, for illustration, is true of railroad transportation and coal mining, since in the former nonfatal accidents are reported in more detail than in the latter, which leaves a reasonable question of doubt as to the actual number and degree of minor injuries in coal mining operations. Since it is also almost impossible to keep always in mind the widely different statutory requirements in accident reports, the most useful and conclusive investigations are those which are limited to fatal accidents, about which there can never be more than a minor degree of uncertainty or inaccuracy, due to causes and conditions fairly uniform and quite well understood.

DEGREE OF ACCIDENTAL INJURY.

The degree of accidental injury is of necessity one of the most important elements of the industrial accident problem. The most extensive investigation into this subject has been made by the New York State Department of Labor for the five years ending with 1906. Out of 39,244 accidents in factories and workshops reported upon in detail, 80.8 per cent caused temporary disablement, 16.8 per cent caused per-

manent disablement, 2.2 per cent proved fatal, and 0.2 per cent were ill defined. Of the 80.8 per cent of accidents causing temporary disablement, 19.0 per cent were cuts, 18.9 per cent were lacerations, 18.0 per cent were bruises, 7.1 per cent were burns, 5.8 per cent were fractures, 3.9 per cent were sprains, and 8.1 per cent were other injuries. The details regarding accidents causing permanent disablement were not as fully reported upon and the returns are, therefore, less conclusive. Of the 16.8 per cent of accidents causing permanent disablement, 14.8 per cent were not specified as to the degree of the injury, but 0.6 per cent resulted in loss of one or both hands or feet, 0.6 per cent in internal injury, 0.4 per cent in loss of one or both limbs, and about the same proportion in the loss of one or both eyes. A critical analysis, by Mr. F. S. Crum, regarding the nature and extent of the injuries reported to the Bureau of Factory Inspection of New York State for the period mentioned, has been published in the *Spectator* (an insurance periodical) for March 19, 1908. From that paper the following table has been prepared:

NUMBER AND PER CENT OF INDUSTRIAL ACCIDENTS IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1906.

[From an analysis by Mr. F. S. Crum, in the *Spectator* for March 19, 1908, compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1906.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	7,427	18.9
Burns.....	2,788	7.1
Cuts, etc.....	7,469	19.0
Bruises.....	7,081	18.0
Sprains and dislocations.....	1,533	3.9
Fractures.....	2,257	5.8
Other injuries.....	3,167	8.1
Total, temporary disablement.....	31,722	80.8
Permanent disablement:		
Partial or complete loss of eyes.....	170	.4
Partial or complete loss of limbs.....	156	.4
Partial or complete loss of hands or feet.....	229	.6
Internal injuries.....	211	.6
Other injuries.....	5,814	14.8
Total, permanent disablement.....	6,580	16.8
Degree of injury not stated.....	78	.2
Fatal accidents.....	864	2.2
Total accidents of all degrees.....	39,244	100.0

A similar analysis of the reports of the British factory inspectors for the period from 1895 to 1906, includes 196,047 accidents to males and 23,120 accidents to females. According to this analysis, which is limited to the adult population, or persons 18 years of age or over, the proportion of fatal accidents in all industrial casualties was 4.8 per cent for males and 0.6 per cent for females.

NUMBER AND PER CENT OF INDUSTRIAL ACCIDENTS IN THE UNITED KINGDOM TO PERSONS OF EACH SEX 18 YEARS OF AGE OR OVER, BY DEGREE OF INJURY, FOR THE PERIOD 1895 TO 1906.

[Compiled from the Annual Reports of the Chief Inspector of Factories and Workshops of the United Kingdom, 1895 to 1906.]

Degree of accidental injury.	Accidents to—			
	Males.		Females.	
	Total.	Per cent.	Total.	Per cent.
Fatal.....	9,406	4.8	134	0.6
Nonfatal:				
Loss of right hand or arm.....	580	.3	65	.3
Loss of left hand or arm.....	513	.3	45	.2
Loss of part of right hand.....	9,096	4.6	1,644	7.1
Loss of part of left hand.....	9,531	4.9	1,126	4.9
Loss of any part of leg or foot.....	882	.4	14	.1
Fracture of limbs or bones of trunk.....	6,026	3.1	302	1.7
Fracture of hand or foot.....	4,668	2.4	573	2.5
Loss of sight of one or both eyes.....	483	.2	104	.4
Injuries to head and face.....	20,060	10.2	2,281	9.8
Burns and scalds.....	26,024	13.3	641	2.8
Lacerations, contusions, etc.....	108,748	55.5	16,101	69.6
Total, nonfatal.....	186,641	95.2	22,966	99.4
Total, fatal and nonfatal.....	196,047	100.0	23,120	1.000

The results of this analysis are most valuable and instructive. It is a matter of regret that similar data are not available for the manufacturing States of this country. American factory inspectors' reports, as a rule, are unfortunately very defective and inconclusive. Even in the few States requiring the publication of accident statistics the lack of completeness and the absence of uniformity in method of accident reports precludes the possibility of an accurate interstate comparison. In Massachusetts during the ten years ending with 1905 there were reported 17,478 persons injured in industrial accidents, of whom 429, or 2.5 per cent, were injured fatally. It is estimated that about one-third of the accidents in that State have no connection with the occupation. In Rhode Island during the period from 1895 to 1904 there were reported among males 792 accidents in industries, of which 44, or 5.5 per cent, were fatal. Among females in the same State 200 accidents in industries were reported, of which none were fatal. The rule in Rhode Island is that all fatal accidents and all other accidents which prevent the injured person from returning to work within two weeks after the injury must be reported. Of course, under this rule, a large number of minor accidents are not reported, although such injuries may have a very important economic, social, and medical significance. In Michigan, during the period from 1901 to 1905, 2,219 accidents in industries were officially reported by factory inspectors, of which 12.1 per cent were fatal, 13.0 per cent serious, 47.9 per cent severe, and 27.0 per cent slight.

Many accidents, of course, occur which diminish the chances of subsequent longevity, even though they are not fatal, or even very serious at the time of their occurrence. Extensive investigations have

been made in Germany, where an enormous mass of statistical material is under continuous observation and a matter of accurate record, but the differences in industrial conditions do not warrant the use of German data for valid conclusions regarding corresponding occupations in the United States. It, however, may safely be affirmed that preventable accidents in industrial occupations cause a most serious impairment of industrial efficiency and a resulting diminution of health and longevity, which for private or government insurance purposes requires to be most carefully taken into account. This subject, aside from its importance as a national problem, is of considerable interest to accident and liability insurance companies, whose business has been growing with great rapidity during the last decade, and to life insurance companies, as a factor affecting materially the mortality experience during the early years of policy duration.

FATAL ACCIDENT FREQUENCY IN THE UNITED STATES.

It is necessary, however, at the outset of any extensive inquiry into this subject to take into consideration certain elementary facts of human mortality and accident frequency. As previously stated the normal rate of accident frequency from all causes among occupied males aged 15 years or over in the United States is approximately 1.13 per 1,000. Out of every 100 deaths from all causes among males 15 years of age or over, 9.1 per cent were deaths from accidents, but the proportionate mortality differs materially according to age and occupation. Thus, at ages 15 to 24 the proportion of accidental deaths is 18.2 per cent, at ages 25 to 34 it is 15.3 per cent, decreasing to 13.0 per cent at ages 35 to 44, and to 5.9 per cent at ages 55 to 64, and only 3.3 per cent at ages 65 or over. How many of these accidents were the result of occupation it is not possible to determine with absolute accuracy, but it is safe to assume that about one-half of the deaths from accidents among males are the result of industrial employments.

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG MALES IN THE REGISTRATION AREA OF THE UNITED STATES, BY AGE GROUPS, FOR THE PERIOD 1900 TO 1906.

[Compiled from special reports of the Bureau of the Census on Mortality Statistics, 1900 to 1906.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	134,700	24,512	18.2
25 to 34 years.....	186,530	28,559	15.3
35 to 44 years.....	205,930	26,848	13.0
45 to 54 years.....	205,497	19,526	9.5
55 to 64 years.....	218,151	12,852	5.9
65 years or over....	435,228	14,270	3.3
	1,386,036	126,567	9.1

CAUSES OF ACCIDENTS IN THE UNITED STATES.

The census of 1900 contains a table which may be utilized to arrive at an approximate estimate of the proportion which industrial accidents bear to the mortality from accidents in general. According to this table 28,073 deaths from accidents among males aged 15 years or over were enumerated in 1900, and 6,719 deaths from accidents among females. Since the proportion of the sexes in the population is about the same, even the mere difference in absolute numbers is decidedly suggestive. Arranged by causes, the disparity in the accident liability of the sexes becomes still more apparent, as follows:

NUMBER AND PER CENT OF DEATHS FROM ACCIDENTS AMONG MALES AND FEMALES 15 YEARS OF AGE OR OVER IN THE UNITED STATES, BY CAUSES, 1900.

[Compiled from the report of the Bureau of the Census on Vital Statistics for 1900. Persons whose ages are reported as unknown are not included.]

Cause of death.	Males.		Females.	
	Number.	Per cent.	Number.	Per cent.
Burns and scalds.....	757	2.7	1,449	21.6
Drowning.....	3,125	11.1	353	5.3
Exposure and neglect.....	209	.7	116	1.7
Gunshot.....	3,003	10.7	329	4.9
Machinery.....	300	1.1	7	.1
Railroad.....	5,619	20.0	395	5.9
Suffocation.....	450	1.6	147	2.2
Sunstroke.....	437	1.6	120	1.8
Surgical operations.....	197	.7	439	6.5
Wounds.....	598	2.1	35	.5
Other causes.....	13,378	47.7	3,359	49.5
Total.....	28,073	100.0	6,719	100.0

The foregoing table emphasizes the higher mortality from accidents among males, due to drowning, gunshot wounds, machinery, railroad casualties, suffocation, sunstroke, and wounds generally. The most important difference, however, is in the large number of unclassified accidents, which include, in all probability, the majority of deaths more or less the immediate result of industrial employment.

SCOPE OF THE PRESENT DISCUSSION.

For the present purpose industrial accidents have been classified broadly according to industry into five groups: (1) Factories and workshops; (2) electrical industries; (3) mines and quarries; (4) transportation by rail; (5) transportation by water, including the fisheries. For each of these groups a few typical employments have been selected to emphasize the problem of accident risk to life and health in particular industries. No extended discussion of the causes of accidents, the degree of injury, or the methods of prevention is possible at the present time. The sources of statistical information are chiefly the statistical reports of the Bureau of Factory Inspection of the State of New York, the accident mortality statistics of the United States census of 1900, the occupation mortality statistics of the State of Rhode Island, the reports of mine inspectors, the reports of

the Interstate Commerce Commission, the industrial mortality experience of the Prudential Insurance Company of America,^a and, finally, the reports of British inspectors of factories and workshops, and of the registrar-general of England and Wales on occupation mortality. In the following discussion of accident frequency in specified industries the general facts of accident occurrence, chiefly from a statistical point of view, are considered. The industries selected are all typical and the figures given emphasize the accident problem in particular trades, so far as the very imperfect available information permits.

ACCIDENTS IN FACTORIES AND WORKSHOPS.

ACCIDENTS IN THE METAL TRADES.

In general manufacturing and mechanical industries, probably the most exposed class are men employed in the metal trades, chiefly in the conversion of iron into steel and of steel into the numerous structural shapes, plates, rods, wire, etc. According to the New York State statistics for the five years ending with 1905, there occurred in this industry in that State 8,456 accidents, of which 135, or 1.6 per cent, were fatal. The fatality ratio varied considerably in the different branches of the industry, having been 4 per cent in smelting and refining, 4.1 per cent in rolling mills, 1.1 per cent in the manufacture of engines and boilers, and 1.5 per cent in other metal industries. In metal smelting and refining 88.9 per cent of the accidents caused temporary disablement, while 6.6 per cent caused permanent disablement. Burns in this branch of the industry caused 24.2 per cent of the accidents from all causes. In rolling mills 85.6 per cent of the accidents caused temporary disablement and 9.8 per cent caused permanent disablement. Cuts and similar injuries in this branch of the industry caused 24.1 per cent of the accidents from all causes. In the manufacture of engines and boilers and pumps 87.9 per cent of the accidents caused temporary disablement and 10.9 per cent caused permanent disablement. Bruises and similar injuries in this branch of the industry caused 25.3 per cent of the accidents from all causes. In miscellaneous metal industries 79 per cent of the accidents caused temporary disablement and 19.3 per cent caused permanent disablement. Cuts and similar injuries in these branches of the industry caused 22.8 per cent of the accidents from all causes. The details of accident frequency in the metal trades are set forth in tabular form, as follows, but additional data for certain branches of this industry are given in Tables I to IV of the appendix.

^a The industrial occupation mortality data of the Prudential Insurance Company of America have been made public at different times at international exhibitions, including Paris in 1900, St. Louis in 1904, and Jamestown Tercentennial in 1907, and they have been discussed in an address on industrial accidents read before the American Association of Medical Examiners, Chicago, 1908.

NUMBER AND PER CENT OF ACCIDENTS IN ALL METAL INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1906.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1906.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	1,572	18.6
Burns.....	573	6.8
Cuts, etc.....	1,982	23.1
Bruiises.....	1,547	18.3
Sprains and dislocations.....	304	3.6
Fractures.....	550	6.6
Other injuries.....	499	5.8
Total, temporary disablement.....	6,997	82.8
Permanent disablement:		
Partial or complete loss of eyes.....	40	.6
Partial or complete loss of limbs.....	27	.3
Partial or complete loss of hands or feet.....	53	.6
Internal injuries.....	30	.3
Other injuries.....	1,147	13.6
Total, permanent disablement.....	1,305	15.4
Degree of injury not stated.....	18	.2
Fatal accidents.....	135	1.6
Total accidents of all degrees.....	8,455	100.0

ACCIDENTS IN IRON AND STEEL MANUFACTURE.

More suggestive and conclusive than the statistics for the State of New York are the annual returns of the Cambria Mutual Benefit Association, of Johnstown, Pa., for the period 1893 to 1906. This society includes within its membership employees in most of the important branches of the iron and steel industry and a small proportion of miners. The death rate from all causes has varied from 5.5 to 19 per 1,000, and the accident rate has varied from 1.4 to 11.7 per 1,000. During 1906 the death rate from all causes was 7.6 per 1,000 and from accidents alone 3.5. During the period 1900 to 1906, in the experience of this association there occurred 306 fatal accidents, of which 26.5 per cent were caused by falling articles, 20.3 per cent by persons being run over by railroad cars, locomotives, etc., 13.7 per cent while walking on railroad tracks outside of the works, 9.8 per cent by miscellaneous accidents inside of the works, 7.5 per cent by falls, 5.2 per cent by gas asphyxiation and explosions, 4.6 per cent by miscellaneous accidents outside of the works, 3.6 per cent by burns and scalds, 2.9 per cent by crane accidents, and 1.3 per cent by heat exhaustion. In addition, 3.3 per cent of the accidental deaths so classified were from homicides and 1.3 per cent from suicides. It is made evident by this analysis of the experience of a representative association of iron and steel workers (including some miners) that employees in the iron and steel industry have a true occupation accident risk as the direct result of their employment, which is probably somewhat less than one-half of the recorded accident rate, or about 1.5 per 1,000.

Some very interesting facts are also brought out by an analysis of the reports of the chief factory inspector of Pennsylvania for the period 1893 to 1902. During this period, among 180,396 persons employed in iron and steel industries and exposed to risk of death one year, there were reported 307 deaths from accident, or at the rate of 1.7 per 1,000 per annum. The rate was 5.4 per 1,000 among nut and bolt makers, 4.3 among persons employed in the manufacture of miscellaneous iron and steel products, 1.9 in the manufacture of nails and spikes, 1.47 in the manufacture of structural iron, 0.82 in the manufacture of locomotives and at railroad repair shops, and 0.84 in the manufacture of ships and engines.

Equally instructive and suggestive is the recorded industrial mortality experience of the Prudential Insurance Company of America during the ten years ending with 1906. There occurred during that period 4,521 deaths of persons employed in all branches of the iron and steel industry, of which 505, or 11.2 per cent, were deaths from accidents. The proportionate mortality was highest during the early ages, or, in detail, 23.2 per cent at ages 15 to 24, 14.6 per cent at ages 25 to 34, and 11.6 per cent at ages 35 to 44. After the age of 44 the percentages were somewhat irregular, having been 8.0 for ages 45 to 54, 8.1 for 55 to 64, 3.3 for 65 to 74, and 2.9 for 75 to 84. The statistical evidence is therefore conclusive that the industrial accident risk in the iron and steel industry at the present time is still a serious one.

The report of the factory inspector of Pennsylvania for 1906, referring briefly to accidents at iron and steel works, states that—

The reckless manipulation of cranes and hoists; the hasty and faulty hooking up of heavy weights; the slipping of furnaces; the overturning of ladles filled with molten metal; the speeding of engines and cars without light, bell, or flagman through the yards of large establishments thronged with busy workers; the ordering employees to work upon rotten scaffoldings; the employment of foreigners ignorant of our language and habits in dangerous occupations without words of caution and without proper oversight, are crimes against humanity that call for drastic legislation.

ACCIDENTS IN THE CHEMICAL INDUSTRY.

The chemical industry in the United States is gradually assuming very considerable proportions. It is one in which the accident risk is widely differentiated according to the different branches, which include the manufacture of sulphuric, nitric, and other acids, soda, potash, alum, coal tar products, cyanide, wood distillation, bleaching material, dyestuffs, tanning material, paints and varnishes, oils, and compressed and liquified gases. In the chemical industries of New York State during the period 1901 to 1905, there occurred 1,339 accidents, of which 33, or 2.5 per cent, were fatal. Of the total number 91.1 per cent caused temporary disablement

and 6.3 per cent permanent disablement. The details of accident frequency in this industry are set forth in tabulated form as follows:

NUMBER AND PER CENT OF ACCIDENTS IN CHEMICAL INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	96	7.3
Burns.....	254	19.0
Cuts, etc.....	203	15.2
Bruises.....	385	28.7
Sprains and dislocations.....	93	6.9
Fractures.....	87	6.5
Other injuries.....	100	7.5
Total, temporary disablement.....	1,220	91.1
Permanent disablement:		
Partial or complete loss of eyes.....	3	.2
Partial or complete loss of limbs.....	4	.3
Partial or complete loss of hands or feet.....	1	.1
Internal injuries.....	8	.6
Other injuries.....	60	5.1
Total, permanent disablement.....	85	6.3
Degree of injury not stated.....	1	.1
Fatal accidents.....	33	2.5
Total accidents of all degrees.....	1,339	100.0

While these statistics are not conclusive, they are the only official data available at the present time. It may, however, be added that according to English mortality returns for the three years ending with 1892, out of 1,159 deaths from all causes among manufacturing chemists 89, or 7.7 per cent, were from accidents; and during the three years ending with 1902, out of 946 deaths from all causes 55, or 5.8 per cent, were from accidents. It is quite probable, however, that the fatal accident risk in the chemical industry is greater in the United States than in England and Wales. The statistics of the factory inspectors show that during the four years ending with 1903 there were reported to certifying surgeons in Great Britain 2,170 accidents in the chemical industry, of which 147, or 6.8 per cent, were fatal. The chemical works in Great Britain are subject to special rules and regulations framed in accordance with the factory acts of 1878 and 1895. The accident risk naturally varies considerably in the different branches, and is a particularly serious one in the manufacture of sulphuric and nitric acids, including the liability to explosion. The risk is still greater in the manufacture of gas for illuminating and industrial purposes. According to returns of British factory inspectors for 1900 to 1903, out of 839 accidents reported to certifying surgeons in connection with the manufacture of gas 115, or 13.7 per cent, proved fatal. More accurate information regarding the accident risk in the manufacture of chemicals and allied products,

including the manufacture of chemical substances produced by the aid of electricity, would be a useful addition to our present limited knowledge.

ACCIDENTS IN THE MANUFACTURE OF EXPLOSIVES.

One of the most dangerous industries is the manufacture of explosives, including matches. According to the New York State accident statistics for the period 1901 to 1905, out of 99 reported accidents in this industry 14, or 14.1 per cent, proved fatal. Of the total number 72.8 per cent caused temporary disablement and 13.1 per cent permanent disablement. The details of accident frequency and degree of injury in these industries are set forth in tabular form below:

NUMBER AND PER CENT OF ACCIDENTS IN THE MANUFACTURE OF EXPLOSIVES AND MATCHES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	20	20.2
Burns.....	4	4.1
Cuts, etc.....	22	22.2
Bruises.....	15	15.1
Sprains and dislocations.....	4	4.1
Fractures.....	3	3.0
Other injuries.....	4	4.1
Total, temporary disablement.....	72	72.8
Permanent disablement:		
Internal injuries.....	1	1.0
Other injuries.....	12	12.1
Total, permanent disablement.....	13	13.1
Fatal accidents.....	14	14.1
Total accidents of all degrees.....	99	100.0

The manufacture of matches is, of course, much less dangerous than the manufacture of gunpowder, dynamite, and other explosives. The manufacture of matches has been quite fully investigated and reported upon to the secretary of state of the Home Department by British factory inspectors, with special reference to the use of phosphorus in the manufacture of lucifer matches. The term "accident," however, in this connection, is hardly applicable, since phosphorous necrosis may more properly be considered an industrial disease. The report was published in 1899 and includes useful observations on the manufacture of matches in the United States.^(a)

The most useful data regarding the risk in the manufacture of explosives are contained in the annual reports of the inspectors of explosives of Great Britain, which extend over a long period of years. During the ten years ending with 1906 there occurred 3,018

^a See also Oliver, *Diseases of Occupation*, 1908, p. 35, et seq.

accidents in the manufacture of explosives, resulting in 3,751 personal injuries, of which 523 were fatal and 3,228 were nonfatal. Of the 523 persons killed 72 were fatally injured in the manufacture of explosives, 31 in the keeping of explosives, 5 in the conveyance of explosives, and 415 in the use of explosives. In the manufacture of gunpowder considered alone there occurred 98 accidents during the ten years ending with 1906, injuring 55 persons, of whom 24, or 43.6 per cent were killed. During the period 1891 to 1900 the rate of fatal accident frequency among persons employed in the manufacture of explosives in Great Britain for which the returns were obtainable was 0.44 per 1,000. The rate of fatal accident frequency in the United States in this industry is probably very much higher, but the present information is not conclusive. The rules and regulations governing the manufacture, storage, and use of explosives in Great Britain are the result of many years of careful and strictly scientific investigation, but regardless of every effort the risk of accidental death and injury in this industry remains a very serious one. Similar rules and regulations in this country would unquestionably serve a decidedly useful and humane purpose.^(a)

ACCIDENTS IN THE LUMBER INDUSTRY.

The lumber industry in all its branches gives employment to a very large number of persons exposed to a very considerable risk of both fatal and nonfatal accidents. The principal risk to fatal accidents is in connection with logging and lumbering. For most of the lumbering States no statistical information is available to determine the incidence of accident frequency in the different employments. The most useful data are for the lumber industry of the State of Washington. According to the bureau of labor statistics of that State for the year ending August 1, 1906, among 9,447 men employed there were 1,022 slight accidents, 64 serious accidents, and 15 fatal accidents.^(b) In proportion to the number employed the slight accident risk was 108.18 per 1,000, the serious accident risk 6.77 per 1,000, and the fatal accident risk 1.59 per 1,000. The returns for 1906 indicated a slightly less accident liability than during 1905. According to the Second Biennial Report of the Bureau of Labor Statistics of Oregon, there were, from January 1, 1905, to September 30, 1906, in that State 151 accidents reported in sawmills, of which 38, or 25.2 per cent, were fatal; 53, or 35.1 per cent, serious; 35, or 23.2 per cent, severe, and 25, or 16.5 per cent, slight. In logging operations 28 accidents were re-

^a See Guide to the Explosives Act, 1875, and to Orders in Council, etc., by Capt. J. H. Thomson, His Majesty's Chief Inspector of Explosives, London, 1905.

^b A very few of these accidents occurred in other industries less hazardous than lumbering.

ported for the same period, of which 15, or 53.6 per cent, were fatal; 11, or 39.3 per cent, serious, and 2, or 7.1 per cent severe. In the lumber, sawmill, and planing mill industries of the State of New York, during the five years ending with 1905, there occurred 795 accidents, of which 30, or 3.8 per cent, were fatal. Of the total number of accidents 57.3 per cent caused temporary disablement and 38.6 per cent permanent disablement. The details of accident frequency and degree of injury are set forth in the table below:

NUMBER AND PER CENT OF ACCIDENTS IN THE LUMBER INDUSTRY IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	133	16.7
Burns.....	18	2.3
Cuts, etc.....	167	21.0
Bruises.....	71	8.9
Sprains and dislocations.....	7	.9
Fractures.....	40	5.0
Other injuries.....	20	2.5
Total, temporary disablement.....	456	57.3
Permanent disablement:		
Partial or complete loss of eyes.....	2	.3
Partial or complete loss of limbs.....	13	1.6
Partial or complete loss of hands or feet.....	21	2.6
Internal injuries.....	2	.3
Other injuries.....	269	33.8
Total, permanent disablement.....	307	38.6
Degree of injury not stated.....	2	.3
Fatal accidents.....	30	3.8
Total accidents of all degrees.....	795	100.0

ACCIDENTS IN SAWMILLS.

While the risk of fatal accidents in sawmills and planing mills is comparatively low, the risk of serious and minor injuries is a very considerable one. The comparatively low ratio of fatal accident liability is more clearly set forth by the official mortality statistics of England and Wales for the three years ending with 1902, which show that out of 1,143 deaths from all causes among sawyers, only 64, or 5.6 per cent, were from accidents. There are no corresponding statistics for the lumber industry as a whole for the United States. The subject of saw accidents has been considered in some detail by Mr. John Calder in a work on "The prevention of factory accidents," in which he states that circular saws annually claim a large number of fingers and portions of hands, as well as some lives, emphasizing the necessity of safeguarding machinery. During 1898, he states, there were recorded in Great Britain under the factory inspection laws 1,144 accidents in connection with circular saws, of which only 5 were fatal. The necessary protective devices are very well illus-

trated in the treatises referred to, and with reference to American conditions the subject has received some recent consideration in the exhibits of the Museum of Safety Devices of the American Institute of Social Service.

ACCIDENTS IN THE TEXTILE INDUSTRIES.

In the textile industries, as a group, the varieties of employment are so very considerable that the degree of accident liability naturally varies widely with the different branches. Most of the work is, of necessity, carried on indoors, under fairly identical conditions and with about the same class of machinery used for spinning and weaving. That the risk to minor injury is a very serious one is emphasized in a very elaborate report on the prevention of accidents from machinery in the manufacture of cotton, published as a British parliamentary document in 1899. As pointed out by Mr. Arthur Whitlegge, His Majesty's chief inspector of factories, "although the proportion of recorded accidents to the number of persons engaged in this trade is not high in comparison with other industries, the total is sufficiently formidable, and the result of the inquiry is to show that it is capable of much reduction." The report furnishes valuable information to manufacturers and machine makers, suggesting methods and means for the reduction of accidents by the proper guarding of all future installations of cotton-making machinery. According to the report referred to, there occurred during 1898 in British cotton factories 3,214 accidents, of which 35 were fatal. Of the total number of accidents, 2,316 were caused by machinery moved by power. According to the factory inspector's statistics of the State of New York for the five years ending with 1905, out of 3,140 accidents in textile industries, 36, or 1.1 per cent, were fatal. Of the total number of accidents 82.5 per cent caused temporary disablement and 16.2 per cent permanent disablement. The details of accident frequency and degree of injury in this industry are set forth in tabular form below:

NUMBER AND PER CENT OF ACCIDENTS IN TEXTILE INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations	667	21.2
Burns	111	3.5
Cuts, etc.	819	26.1
Bruises	508	16.2
Sprains and dislocations	124	3.9
Fractures	183	5.8
Other injuries	182	5.8
Total, temporary disablement	2,594	82.5

NUMBER AND PER CENT OF ACCIDENTS IN TEXTILE INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, ETC.—Concluded.

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Permanent disablement:		
Partial or complete loss of eyes.....	5	.2
Partial or complete loss of limbs.....	21	.7
Partial or complete loss of hands or feet.....	29	.9
Internal injuries.....	11	.4
Other injuries.....	439	14.0
Total, permanent disablement.....	505	16.2
Degree of injury not stated.....	5	.2
Fatal accidents.....	36	1.1
Total accidents of all degrees.....	3,140	100.0

TEXTILE ACCIDENTS IN RHODE ISLAND.

There are no similar accident returns in detail for the principal textile centers of the United States. The only useful data are the mortality returns for the State of Rhode Island, but on account of the relatively low proportion of fatal accidents in this industry the mortality data are of less value than they would be otherwise. During the ten years ending with 1906 there occurred in Rhode Island 1,186 deaths of operatives in textile mills, of which 90, or 7.6 per cent, were accidental. The term "operatives" is a very general one and includes weavers and spinners, carders, etc. Among 26 deaths of carders, separately reported, there was 1 accident, or 3.8 per cent of the total mortality from all causes. Among dyers there occurred 79 deaths from all causes, of which 8, or 10.1 per cent, were accidental. According to this return, the fatal accident liability in the textile industry was somewhat greater than generally assumed.^(a)

TEXTILE ACCIDENTS IN GREAT BRITAIN.

The corresponding reports of British factory inspectors contain much more interesting and useful information. During the five years ending with 1904, out of all accidents reported for textile industries 1.6 per cent were fatal, against 3.9 per cent for nontextile industries, including laundries, docks and wharves, warehouses, and building construction. Grouped according to the degree of injury, the reports for the four years ending with 1903 furnish the details of 18,828 accidents reported as having occurred in textile manufactories and of 98,728 accidents reported as having occurred in nontextile industries.

^a An interesting statistical analysis of 1,000 accidents in a representative cotton mill is contained in the special report on dangerous occupations of the Massachusetts State Board of Health, Boston, 1907, pp. 29 et seq.

NUMBER AND PER CENT OF ACCIDENTS IN TEXTILE AND IN NONTEXTILE INDUSTRIES IN THE UNITED KINGDOM, BY DEGREE OF INJURY, FOR THE PERIOD 1900 TO 1903.

[Compiled from the Annual Reports of the Chief Inspector of Factories and Workshops of the United Kingdom, 1900 to 1903.]

Degree of accidental injury.	Textile industries.		Nontextile industries.	
	Number of accidents.	Per cent of total.	Number of accidents.	Per cent of total.
Fatal accidents.....	288	1.5	3,949	4.0
Nonfatal accidents:				
Loss of right hand or arm.....	80	.4	266	.3
Loss of left hand or arm.....	57	.3	218	.2
Loss of part of right hand.....	1,204	6.4	4,874	4.9
Loss of part of left hand.....	909	4.8	4,824	4.9
Loss of any part of leg or foot.....	28	.2	433	.4
Fracture of limbs or bones of trunk.....	672	3.6	2,644	2.7
Fracture of hand or foot.....	550	2.9	1,985	2.0
Loss of sight of one or both eyes.....	43	.2	201	.2
Injuries to head and face.....	1,543	8.2	7,936	8.0
Burns and scalds.....	461	2.5	12,459	13.7
Lacerations, contusions, etc.....	12,998	66.0	57,939	58.7
Total nonfatal accidents.....	18,540	98.5	94,779	96.0
Total fatal and nonfatal accidents.....	18,828	100.0	98,728	100.0

The table is a very suggestive one, but for a further understanding of the conditions injurious to life and health in this industry a much more extended analysis of the data is required. It is particularly evident in the case of this industry that material differences in the methods of reporting nonfatal accidents must seriously impair the value of conclusions, and extreme caution, therefore, is necessary in the use of any statistical data, official or otherwise, upon this subject.

ACCIDENTS IN ELECTRICAL INDUSTRIES.

The electrical industries of the United States have made such extraordinary progress during recent years that central electric light and power stations alone in 1902 gave employment to 6,996 salaried officials and clerks and 23,330 wage-earners, all more or less exposed to the risk of accidental death and injury as the result of direct or alternating electrical currents. The accident risk varies naturally very considerably according to occupations, the most important of which are those of foremen, inspectors, engineers, firemen, dynamo and switchboard men, linemen, mechanics, and lamp trimmers. A large amount of useful information regarding central light and power stations has been published in the form of a special report by the Bureau of the Census in 1905. The accident statistics for the State of New York for the five years ending with 1905 return 1,923 recorded casualties, of which only 16, or 0.8 per cent, were fatal. Of the total number of accidents 82.3 per cent caused temporary disablement and 16.8 per cent permanent disablement. Details of the accident frequency and degree of injury in this industry are set forth in the following table.

NUMBER AND PER CENT OF ACCIDENTS IN ELECTRICAL INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Percent.
Temporary disablement:		
Lacerations.....	347	18.0
Burns.....	210	10.9
Cuts, etc.....	409	21.3
Bruiises.....	328	17.1
Sprains and dislocations.....	60	3.1
Fractures.....	86	4.5
Other injuries.....	143	7.4
Total, temporary disablement.....	1,583	82.3
Permanent disablement:		
Partial or complete loss of eyes.....	7	.4
Partial or complete loss of limbs.....	4	.2
Partial or complete loss of hands or feet.....	10	.5
Internal injuries.....	7	.4
Other injuries.....	294	15.3
Total, permanent disablement.....	322	16.8
Degree of injury not stated.....	2	.1
Fatal accidents.....	16	.8
Total accidents of all degrees.....	1,923	100.0

ACCIDENT LIABILITY OF ELECTRICIANS AND LINEMEN.

These statistics, however, have only a very limited bearing upon the electrical industry as a whole, pertaining, as they probably do, chiefly to the manufacture of electrical machinery, apparatus, and supplies, rather than to exposure in electric light and power stations. In the manufacture of electrical machinery, etc., more than 60,000 wage-earners are employed, and in addition more than 10,000 salaried officials, clerks, etc., who, however, are much less seriously exposed to the danger of electrical accident than men in responsible positions in central light and power plants. The statistics also have no reference to the accident liability of men employed on electric railways. The Prudential Insurance Company of America, at the Jamestown Exposition, exhibited the results of its industrial mortality experience for the period of 1897 to 1906 for certain well-defined groups of persons employed in the electrical industry. According to this experience, out of 645 deaths of electricians, 95, or 14.7 per cent, were from accidents, but the proportionate mortality was highest at ages 25 to 34, when 19.1 per cent of the deaths from all causes were from accidents, decreasing to 15.4 per cent at ages 35 to 44, to 11 per cent at ages 45 to 54, and to 7.8 per cent at ages 55 to 64. Among electric linemen there occurred 240 deaths during the period mentioned, of which 112, or 46.7 per cent, were from accidents. At ages 15 to 24 the proportionate mortality from accidents was 55.3 per cent of the mortality from all causes, increasing to 56.8 per cent at ages 25 to 34, and decreasing to 38.2 per cent at ages 35 to 44, and to 30 per cent at ages 45 to 54. Somewhat similar are the results of the analysis of the

mortality data for Rhode Island for the ten years ending with 1906, during which period there were recorded in that State 35 deaths of electricians, of which 6, or 17.1 per cent, were from accidents, while there occurred 13 deaths among linemen, of which 9, or 69.2 per cent, were from accidents.

The details of the published insurance mortality experience with this class of labor are set forth in the following two tables, which show the number of deaths from all causes at each period of life and the number of deaths from accidents and the resulting percentage of accident frequency at each decennial group of ages or the proportionate accident mortality as determined by this method.

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG ELECTRICIANS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	199	38	19.1
25 to 34 years.....	240	37	15.4
35 to 44 years.....	127	14	11.0
45 to 54 years.....	64	5	7.8
55 to 64 years.....	12	1	8.3
65 years or over.....	3	.....	.....
Total.....	645	95	14.7

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG ELECTRIC LINEMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	47	26	55.3
25 to 34 years.....	96	54	56.8
35 to 44 years.....	68	26	38.2
45 to 54 years.....	20	6	30.0
55 to 64 years.....	8	.....	.....
65 years or over.....	2	.....	.....
Total.. .	240	112	46.7

ELECTRICAL ACCIDENTS IN GREAT BRITAIN.

In Great Britain during the four years ending with 1903 there were recorded 174 electrical accidents, of which 37, or 21.3 per cent, were fatal. The subject of electrical accident risk has been discussed at considerable length in Oliver's Dangerous Trades, in a separate chapter on electrical generating works, in which reference is made to a parliamentary report of 1897 of a departmental committee on elec-

trical generating works, which contains a large amount of extremely useful and suggestive information. Much useful information is also contained in the annual reports of the Massachusetts Gas and Electric Light Commission. The subject is also discussed at some length in Calder's treatise on "The Prevention of Factory Accidents," from which are briefly quoted the following remarks:

The special risk from electric shock in connection with the generation and distribution of electricity in factories, workshops, and other premises is one which has increased with the progress in the use of high pressure. A dangerous and possibly fatal shock may be sustained by contact between two portions of the human body or even clothing and two conductors differing in pressure by 700 to 1,200 volts, according to the perfection of the contact. An insulated person safely touching highly charged metal and at the same time passing any conductor to another uninsulated person, or even touching the latter or an earthed conductor, may cause a fatal or severe shock. The metal of the dynamos, the switchboard and connections, the high pressure mains, transformers, and series arc lamps is material from the touching of which under the above conditions dangerous shock would result. The ordinary fencing may be relied upon for protecting moving parts of electrical generating machinery in the case of direct currents below a voltage of 700 and of alternate currents less than 350 volts pressure. All installations with higher voltages should be regarded as high pressure, and the following extra precautions should be adopted in view of the risk from shock.^(a)

There are few employments which require more serious attention to the risk of accidental injuries than the electrical industries, and as emphasized by the statistics previously quoted, the risk is particularly great in the employment of linemen, where, however, the electrical hazard is increased by the liability to serious falls in the climbing of poles and connecting of wires while at a considerable height above the ground.

ACCIDENTS IN MINES AND QUARRIES.

The accident risk in mines and quarries is a widely distributed one throughout the United States, and every branch of the industry would require special consideration to properly emphasize the specific occupation hazard. There were in 1902, according to the census, 151,516 mines in the United States, giving employment to 581,728 wage-earners and 38,128 salaried officials, clerks, etc.

ACCIDENTS IN COAL MINING.

The most important branch of the industry is coal mining, which during 1902 employed 350,329 wage-earners. The broad division in coal mining is between anthracite and bituminous. The anthracite beds are practically limited to Pennsylvania, while bituminous coal is mined in a large number of States, including the Pacific coast States

^a The Prevention of Factory Accidents, by John Calder, p. 114.

and the Territory of Alaska. During the ten years ending with 1906 there occurred in the anthracite regions of Pennsylvania 4,833 fatal accidents and 11,084 nonfatal injuries. The fatal accident liability in anthracite mining in proportion to the number employed was 3.18 per 1,000 and 7.29 per 1,000 for nonfatal injuries. In the bituminous coal fields of Pennsylvania there occurred during the ten years ending with 1906 3,522 fatal accidents and 7,671 nonfatal injuries. In proportion to the number employed the fatal accident rate was 2.77 and the nonfatal accident rate 6.03 per 1,000. The accident liability, both fatal and nonfatal, was, therefore, somewhat greater in the anthracite coal fields than in the bituminous, but the differences are not as great as generally assumed. A more marked difference appears when the accident liability in the soft-coal regions of Pennsylvania is compared with that in the soft-coal regions of certain other States. In Illinois, in the ten years ending with 1906, the fatal accident rate was 2.57 and the nonfatal accident rate 10.67 per 1,000, while in the State of Missouri during the same period the fatal accident rate was only 1.39 and the nonfatal accident rate 2.65 per 1,000. The accident risk in soft-coal mining is very much greater in the far western States, and, for illustration, in the State of Colorado during the ten years ending with 1906 the fatal accident rate in coal mining was 5.87 per 1,000 and the nonfatal rate was 10.74.^(*) The details of coal mining accidents in the anthracite fields of Pennsylvania are shown here, but additional tables for other States are given in the statistical appendix.

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN THE ANTHRACITE COAL MINES OF PENNSYLVANIA, BY YEARS, 1897 TO 1906.

[Compiled from the Annual Reports of the Pennsylvania Department of Mines.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897	149,557	423	2.83	1,106	7.40
1898	142,420	411	2.89	1,134	7.96
1899	140,583	461	3.28	1,030	7.33
1900	143,826	411	2.86	1,057	7.35
1901	147,651	513	3.47	1,243	8.42
1902	148,141	300	2.03	641	4.33
1903	151,827	518	3.41	1,325	8.73
1904	161,330	595	3.69	1,047	6.49
1905	168,254	644	3.83	1,289	7.66
1906	166,175	557	3.35	1,212	7.29
Total, 5 years, 1897 to 1901	724,037	2,219	3.06	5,570	7.69
Total, 5 years, 1902 to 1906	795,727	2,614	3.29	5,514	6.93
Total, 10 years, 1897 to 1906	1,519,764	4,833	3.18	11,084	7.29

* For a further discussion of coal mining accidents by the writer, see articles in the *Mineral Industry*, volume 6, New York, 1897, and in the *Engineering and Mining Journal* for January 27, 1900; November 24, 1900; August 10, 1901; October 25, 1902; September 5 and 26, 1903; December 22, 1904; December 2, 1905; December 22, 1906, and January 4, 1908. For a discussion of the conditions of labor and life in anthracite mining by the writer, see the *Engineering and Mining Journal* for November 22 and 29 and December 13 and 20, 1902.

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN THE BITUMINOUS COAL MINES OF PENNSYLVANIA, BY YEARS, 1897 TO 1906.

[Compiled from the Annual Reports of the Pennsylvania Department of Mines. The figures for each year are as shown in the report for that particular year.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	86,554	150	1.73	426	4.92
1898.....	87,802	198	2.28	458	5.22
1899.....	91,440	258	2.82	487	5.33
1900.....	109,018	265	2.44	584	5.36
1901.....	117,602	301	2.56	656	5.58
1902.....	135,386	456	3.36	861	6.36
1903.....	151,745	402	2.65	1,046	6.89
1904.....	155,747	536	3.44	917	5.89
1905.....	164,941	479	2.90	1,076	6.52
1906.....	172,928	477	2.76	1,160	6.71
Total, 5 years, 1897 to 1901.....	492,416	1,172	2.39	2,611	5.30
Total, 5 years, 1902 to 1906.....	780,747	2,350	3.01	5,060	6.48
Total, 10 years, 1897 to 1906.....	1,273,163	3,522	2.77	7,671	6.03

ACCIDENTS IN IRON MINING.

In metal mining the most important branch is iron-ore mining in the Lake Superior region. The mining of iron ore in the aggregate gives employment to about 40,000 wage-earners. The most trustworthy data are for Dickinson and Marquette counties, Mich. During the ten years ending with 1906 the fatal accident rate in the iron mines of Dickinson County was 4.23 per 1,000, while the nonfatal accident rate was 3.80. But the term "accident" in this case is limited to serious injuries. The accident rate has varied considerably from year to year, having been as high as 7.79 per 1,000 in 1901 and as low as 2.54 per 1,000 in 1902. The fatality rate of persons employed inside of the mines during the ten-year period was 4.95 per 1,000, while the fatality rate outside of the mines was 2.53 per 1,000. In Marquette County during the same period the fatal accident rate was 4.31 per 1,000, having been as high as 5.58 in 1901, and as low as 3.62 in 1900.

The details of the accident frequency during each of the years of the ten-year period are given in the following table. An additional table showing the frequency of inside and outside accidents in the mines of Dickinson County is given in the appendix, Table VIII.

NUMBER OF FATAL AND OF SERIOUS NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN IRON-ORE MINES OF DICKINSON COUNTY, MICH., BY YEARS, 1897 TO 1906.

Year.	Number of employees.	Fatal accidents.		Serious nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	2,161	10	4.63	7	3.24
1898.....	2,470	11	4.45	17	6.88
1899.....	2,873	9	3.13	16	5.57
1900.....	3,213	19	5.91	12	3.73
1901.....	3,467	27	7.79	7	2.02
1902.....	3,943	10	2.54	17	4.31
1903.....	4,004	16	4.00	14	3.50
1904.....	3,046	9	2.95	11	3.61
1905.....	3,212	9	2.80	8	2.49
1906.....	3,490	15	4.30	12	3.44
Total, 5 years, 1897 to 1901.....	14,184	76	5.36	59	4.16
Total, 5 years, 1902 to 1906.....	17,095	59	3.33	62	3.50
Total, 10 years, 1897 to 1906.....	31,880	135	4.23	121	3.80

NUMBER OF FATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN IRON-ORE MINES OF MARQUETTE COUNTY, MICH., BY YEARS, 1897 TO 1906.

Year.	Number of employees.	Fatal accidents.	
		Number.	Rate per 1,000 employees.
1897.....	4,153	17	4.09
1898.....	4,289	19	4.33
1899.....	5,555	26	4.60
1900.....	6,627	24	3.62
1901.....	5,200	29	5.58
1902.....	5,518	29	5.26
1903.....	6,000	23	3.83
1904.....	4,024	15	3.73
1905.....	5,080	22	4.35
1906.....	5,840	22	3.77
Total, 5 years, 1897 to 1901.....	25,024	115	4.42
Total, 5 years, 1902 to 1906.....	28,442	111	4.20
Total, 10 years, 1897 to 1906.....	52,466	226	4.31

ACCIDENTS IN LEAD AND ZINC MINING.

The mining of lead and zinc is chiefly concentrated in Missouri. The returns for the metalliferous mines of that State may, therefore, be accepted as representative of this industry. During the ten-year period ended with 1906 the fatal accident rate in Missouri lead and zinc mines was 3.01 per 1,000 and the nonfatal accident rate 1.69. The fatal accident rate has varied considerably from year to year, having been as high as 4.49 per 1,000 in 1900, and as low as 1.23 per 1,000 in 1902. The mining of lead and zinc ores as a separate industry gives employment to about 8,000 (*) wage-earners throughout the United States. The details of accident frequency in the lead and zinc mines of Missouri, including the mills, are set forth in the following table.

* 7,881, according to Census Report on Mines and Quarries, 1902, p. 445.

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN LEAD AND ZINC MINES OF MISSOURI (INCLUDING THE MILLS), BY YEARS, 1897 TO 1906.

[Compiled from the Annual Reports of the Missouri Bureau of Mines and Mine Inspection.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	6,364	16	2.51	5	0.79
1898.....	7,000	29	3.81	16	2.10
1899.....	10,997	27	2.46	19	1.73
1900.....	11,583	53	4.49	27	2.33
1901.....	10,989	41	3.73	24	2.18
1902.....	11,358	14	1.23	23	2.03
1903.....	12,405	17	1.37	21	1.69
1904.....	13,608	30	2.20	8	.59
1905.....	12,456	49	3.93	13	1.04
1906.....	13,243	58	4.38	31	2.34
Total, 5 years, 1897 to 1901.....	47,542	165	3.47	91	1.91
Total, 5 years, 1902 to 1906.....	63,070	168	2.66	96	1.53
Total, 10 years, 1897 to 1906.....	110,612	333	3.01	187	1.69

ACCIDENTS IN COPPER MINING.

Copper mining gives employment to about 26,000 wage-earners, chiefly in the State of Montana, the Lake Superior region, and in Arizona. The most trustworthy data regarding the accident liability in copper mines are for Houghton County, Mich., for the ten years ending with 1903. The data are limited to fatal accidents, apparently no returns being required for nonfatal injuries. The recorded fatal accident rate was 2.80 per 1,000 for the ten-year period, having been as high as 6.35 per 1,000 in 1895, and as low as 2.07 per 1,000 in 1899. The details of fatal accident frequency in the copper mines of Houghton County, Mich., are set forth in the table below:

NUMBER OF FATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN COPPER MINES OF HOUGHTON COUNTY, MICH., BY YEARS, 1894 TO 1903.

[Figures for 1894 to 1902 from Twenty-first Annual Report of the Michigan Bureau of Labor, p. 119; figures for 1903 from the Engineering and Mining Journal.]

Year.	Number of employees.	Fatal accidents.	
		Number.	Rate per 1,000 employees.
1894.....	7,348	22	2.99
1895.....	7,249	46	6.35
1896.....	8,170	19	2.33
1897.....	8,726	26	2.98
1898.....	10,469	23	2.20
1899.....	13,051	27	2.07
1900.....	13,971	30	2.58
1901.....	13,498	33	2.44
1902.....	14,130	44	3.11
1903.....	13,629	33	2.42
Total, 5 years, 1894 to 1898.....	41,962	136	3.24
Total, 5 years, 1899 to 1903.....	68,279	173	2.53
Total, 10 years, 1894 to 1903.....	110,241	309	2.80

Since copper mining in Montana constitutes the predominating branch of the mining industry in that State, the accident returns for

metal mines generally are fairly representative of the copper mining industry, and they may be briefly referred to in connection with the present discussion. During the ten years ending with 1906 the fatal accident rate in Montana metal mines was 3.48 per 1,000, having been as high as 5.29 in 1897 and as low as 2.75 in 1903. The nonfatal accident liability was 2.91 per 1,000 during the ten-year period, having been as high as 3.80 in 1904 and as low as 1.79 in 1899. It is apparent, however, from the returns that the more serious accidents only are required to be reported. The details of accident frequency in metal mining in Montana are given in the appendix.

ACCIDENTS IN GOLD AND SILVER MINING.

For gold and silver mines no statistical data are available, except the returns for the metalliferous mines and smelters of Colorado. The gold and silver mines constitute nearly the whole of metal mining in Colorado, and the returns may, therefore, be accepted as representative of the gold and silver mining industry in that State. The fatality rate in Colorado metal mines during the ten years ending with 1906 was 2.85 per 1,000, the rate having been as high as 3.77 per 1,000 in 1897 and as low as 2.08 in 1903. The nonfatal accident rate was 12.96 per 1,000 during the ten-year period, having been as high as 16.99 in 1901 and as low as 5.78 in 1897. Evidently nonfatal accidents in Colorado include minor injuries, which apparently are not reported in Montana. During 1906 the fatal accident rate in the gold mines of New South Wales was 0.45 per 1,000, of Queensland 1.52, of Western Australia 2.35, and in the Transvaal 5.40. In 1905 the rate for the Transvaal was 5.36 per 1,000. The details of accident frequency in the metal mining industry of Colorado are given in the table below:

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN GOLD, SILVER, AND LEAD MINES OF COLORADO, BY YEARS, 1897 TO 1906.

[From the Biennial Reports of the State Bureau of Mines of Colorado.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	29,215	110	3.77	169	5.78
1898.....	30,221	108	3.57	184	6.09
1899.....	39,210	103	2.63	481	12.27
1900.....	40,111	107	2.67	526	13.11
1901.....	37,260	121	3.25	633	16.99
1902.....	35,118	82	2.33	561	15.97
1903.....	32,267	67	2.08	494	15.31
1904.....	35,376	101	2.86	539	15.24
1905.....	34,278	109	3.18	496	14.18
1906.....	34,790	82	2.36	436	12.53
Total, 5 years, 1897 to 1901.....	176,027	549	3.12	1,993	11.33
Total, 5 years, 1902 to 1906.....	171,829	441	2.57	2,516	14.64
Total, 10 years, 1897 to 1906.....	347,856	990	2.85	4,509	12.96

ELECTRICAL RISK IN MINING.

It is evident that the risk to life and the liability to injury in all branches of mining in the United States is very serious, and apparently the tendency is toward an increase in the risk. One of the most important factors of recent years contributing toward an increase in the accident liability is the increasing use of electricity in mines, chiefly for the operation of coal-cutting machinery. There is a brief discussion of this subject in a special report of the Bureau of the Census,^(a) on mines and quarries, while a more extended consideration is presented in the Report of the Departmental Committee on the Use of Electricity in Mines, published as a British parliamentary document in 1904. The subject is also referred to officially and at length, with extensive statistical illustrations, in the various reports of the mine inspectors of the different States. It requires no very extended investigation to make it clear that the mining industry at the present time is subject to a much higher accident liability than appears necessary in the light of recent and thoroughly scientific investigations into the causes of such accidents and the conditions responsible for their occurrence. On the other hand, a part of the increase in the risk is the result of the increasing depth of mines and the increasing employment of a low grade of foreign, non-English-speaking labor.^(b)

ACCIDENTS IN SMELTING AND REFINING.

The frequency of industrial accidents in the recovery of precious metals by the cyanide and other processes, as well as the risk of employment in smelting and refining generally, is a separate subject for the discussion of which there are not as yet any very trustworthy statistical data for the United States, although some useful information is available for certain foreign countries. The most serious risk is the liability to lead and other forms of industrial metallic poisoning, but these are generally classified as industrial or occupation diseases rather than as industrial accidents. Regarding the risk of industrial poisoning the works of Arlidge and Oliver should be consulted, but it would appear to be fairly well established that lead and other forms of industrial poisoning are not as common in the United States as in England and on the Continent.

ACCIDENTS IN THE MINERAL OIL INDUSTRY.

Another branch of the mining industry is the prospecting and drilling for petroleum and the operation of oil wells and pipe lines, including refineries, for which as yet there are no very satisfactory

^a Special Report on Mines and Quarries, Bureau of the Census, 1905, p. 145.

^b For a further discussion of accidents in metal mining by the writer, see the issues of the Engineering and Mining Journal for January 14 and 21, 1904.

statistics. From such information, however, as is available the accident risk would appear to be much greater in the Louisiana-Texas oil fields and in those of southern California than in the oil fields of Pennsylvania, West Virginia, Ohio, or Indiana. The accident risk in connection with oil well drilling and operating is briefly indicated in the following quotation from a report on the oil fields of the Louisiana-Texas Gulf Coastal Plain, published by the United States Geological Survey in 1903:

Considerable danger accompanies the flowing and closing of a new well on account of the poisonous nature of the gas accompanying the oil flow. This gas contains a large proportion of hydrogen sulphide, and its poisonous qualities are intensified by its being saturated with petroleum vapor. Petroleum vapor has the effect of rendering persons inhaling it unconscious, and if one remains under its influence for any length of time death ensues. The combination of the hydrogen sulphide and petroleum vapor issuing from the wells is such as to render death almost instantaneous.^(*)

The petroleum industry is constantly increasing in importance, and in 1902 there were 118,671 wells, giving employment to 17,552 wage-earners.^(*) The principal risk appears to be in connection with derrick construction, where there is a serious liability to falls, but the statistical data regarding this occupation are fragmentary and inconclusive.

ACCIDENTS IN QUARRIES.

Quarrying is a very dangerous industry, which, according to the Census of 1902, gives employment to 71,156 wage-earners.^(*) The accident liability varies somewhat, but in general quarrying the risk is about the same, whether it be the quarrying of limestone, granite, marble, sandstone, etc. The accident liability varies also, according to the character of the strata and the depth of the quarries as well as the methods used in quarrying, which, of course, includes the extensive handling and use of explosives. The only conclusive available data regarding the fatal accident liability of quarrymen in the United States are derived from the mortality experience of the industrial insurance company previously referred to, and which includes the ten years ending with 1906. In this experience there occurred 198 deaths, of which 52, or 26.3 per cent, were due to accident. The proportionate mortality varied considerably according to age, having been 77.8 per cent at ages 15 to 24, 45.5 per cent at ages

^{*} Bulletin 212, U. S. Geological Survey, 1903, p. 170.

[†] Special Report of the Bureau of the Census on Mines and Quarries, 1902, p. 721.

[‡] Special Report of the Bureau of the Census on Mines and Quarries, 1902, p. 785.

25 to 34, 32.4 per cent at ages 35 to 44, 28.6 per cent at ages 45 to 54, 18.6 per cent at ages 55 to 64, and 12.5 per cent at ages 65 to 75. The details of this mortality experience are set forth in the following table, which shows by periods of life the proportionate mortality from accidents in the mortality from all causes:

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG QUARRYMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	9	7	77.8
25 to 34 years.....	11	5	45.5
35 to 44 years.....	34	11	32.4
45 to 54 years.....	49	14	28.6
55 to 64 years.....	59	11	18.6
65 years or over.....	36	4	11.1
Total.....	198	52	26.3

The subject of accidents to quarrymen is discussed in some detail in *Dangerous Trades*, by Oliver, who very fully considers the varieties of quarries, the methods of working, the character of accidents and their causes, including the liability to injuries to the eyes, which are often of serious consequence.^(a) In England the working of quarries is under strict supervision and controlled by legal enactments, which are fully set forth in the different quarries acts of 1887, 1894, and other years. The general fatal accident rate in the quarries of the United Kingdom in 1906 was 1.06 per 1,000.^(b) In France, during 1906, the fatality rate in quarries was 0.92, in Germany 1.47, and in Italy 1.05 per 1,000. The accident liability in this occupation is further emphasized by English mortality statistics, according to which, out of 2,839 deaths during the three years ending with 1902, 259, or 9.12 per cent, were from accidents.

ACCIDENTS IN TRANSPORTATION BY RAIL.

The accident liability in the railway service constitutes in the aggregate a most serious risk to the life, health, and well-being of both employees and passengers. Out of 658,105 deaths from all causes reported in the registration area of the United States during 1906, rail-

^a *Dangerous Trades*, pp. 560, 561.

^b For additional statistics of accidents in quarries in the United Kingdom, see Tables X and XI of the appendix.

road accidents and injuries caused 7,090 deaths, while in addition there were 1,488 deaths caused by street car accidents. The corresponding number of accidental deaths, more or less the result of industrial activity, were 1,523 deaths resulting from injuries in mines and quarries, 565 deaths resulting from injuries by machinery, 1,524 deaths resulting from injuries by vehicles and horses, and 183 deaths resulting from automobile accidents.^(a) According to the returns for 1906 of the Interstate Commerce Commission, 3,929 railroad employees were killed as the result of railroad accidents and 76,701 were injured.^(b)

ACCIDENT LIABILITY OF RAILWAY TRAINMEN.

The most important group of railway employees is trainmen, which during 1906, numbered nearly 300,000. Among this number there occurred 2,310 deaths caused by railroad casualties, or 8.09 per 1,000, while, in addition, there occurred 34,989 injuries, or at the rate of 122.53 per 1,000. The fatality rate during the last five years was 7.91, against 6.81 per 1,000 during the preceding quinquennial period. The rate of injuries other than fatal was 110.07 per 1,000 during the last five years, against 88.22 during the preceding five-year period.

The details of accident frequency by single years are given in the following table derived from the statistical reports of the Interstate Commerce Commission.

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES AMONG RAILWAY TRAINMEN IN THE UNITED STATES, BY YEARS, 1897 TO 1906.

[Compiled from annual reports of the Interstate Commerce Commission on Statistics of Railways in the United States.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	161,307	976	6.05	13,795	85.47
1898.....	170,708	1,141	6.68	15,645	91.65
1899.....	178,851	1,155	6.46	16,663	93.17
1900.....	191,196	1,366	7.30	17,571	91.90
1901.....	209,043	1,537	7.35	16,715	79.95
1902.....	225,422	1,674	7.43	21,503	95.39
1903.....	253,660	2,070	8.16	25,676	101.22
1904.....	253,834	2,114	8.33	29,275	115.33
1905.....	265,175	1,990	7.50	29,853	112.58
1906.....	285,556	2,310	8.09	34,989	122.53
Total, 5 years, 1897 to 1901.....	911,197	6,205	6.81	80,389	88.22
Total, 5 years, 1902 to 1906.....	1,283,647	10,158	7.91	141,296	110.07
Total, 10 years, 1897 to 1906.....	2,194,844	16,363	7.46	221,685	101.00

^a Mortality Statistics, 1906, United States Bureau of the Census, p. 86.

^b Statistics of Railways in the United States, Interstate Commerce Commission, 1906, p. 109.

ACCIDENT LIABILITY OF SWITCH TENDERS AND FLAGMEN.

The next most important group of railroad employees is switch tenders, crossing tenders, and watchmen. The number of men in this employment during 1906 was nearly 50,000. The fatal accident rate for the group was 2.96 per 1,000, and the nonfatal accident rate 20.66. The fatality rate during the last five years was 4.11 against 4.89 during the preceding five years. The injury rate was 32.14 against 51.87. The improvement in the accident rate in this occupation is chiefly the result of improved grade crossings, the introduction of a more satisfactory signal system, the operation of switches and gates from signal towers, and other improvements along these lines. The details of accident frequency by single years are set forth in the next table.

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES AMONG RAILWAY SWITCH TENDERS, CROSSING TENDERS, AND WATCHMEN IN THE UNITED STATES, BY YEARS, 1897 TO 1906.

[Compiled from annual reports of the Interstate Commerce Commission on Statistics of Railways in the United States.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	43,768	201	4.59	2,423	55.36
1898.....	47,124	242	5.14	2,677	56.81
1899.....	48,686	273	5.61	2,992	61.46
1900.....	50,789	272	5.36	3,060	60.26
1901.....	47,576	175	3.68	1,190	25.01
1902.....	50,489	200	3.96	1,443	28.58
1903.....	49,961	283	5.66	2,352	47.08
1904.....	46,262	229	4.95	2,070	44.75
1905.....	45,532	136	2.99	883	19.39
1906.....	49,659	147	2.96	1,026	20.66
Total, 5 years, 1897 to 1901.....	237,943	1,163	4.89	12,342	51.87
Total, 5 years, 1902 to 1906.....	241,903	995	4.11	7,774	32.14
Total, 10 years, 1897 to 1906.....	479,846	2,158	4.50	20,116	41.92

ACCIDENT LIABILITY OF RAILWAY MAIL CLERKS.

A very important though not very numerous group of employees in the railway service is railway mail clerks. During the year 1906 the number employed in this occupation was 13,317. There occurred among this group 16 deaths, or 1.20 per 1,000, and 77 injuries, or 5.78 per 1,000. The fatality rates have fluctuated considerably during the past ten years, having been as high as 1.85 per 1,000 in 1897 and as low as 0.46 per 1,000 in 1900. During the last five years the average fatality rate was 1.29 per 1,000, against 0.91 per 1,000 during the preceding five years. The rate of injuries has also increased from 5.69 per 1,000 during the first five years to 8.11 per 1,000 during the last five years of

the decade ending with 1906. The details of accident frequency by single years in this occupation are given in the table below :

NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES AMONG RAILWAY MAIL CLERKS IN THE UNITED STATES, BY YEARS, 1897 TO 1906.

[Compiled from the annual reports of the General Superintendent of the Railway Mail Service.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	7,573	14	1.85	33	4.36
1898.....	7,969	7	.88	34	4.25
1899.....	8,388	6	.72	50	5.96
1900.....	8,665	4	.46	57	6.56
1901.....	8,978	7	.78	63	7.02
1902.....	9,485	9	.95	88	9.28
1903.....	10,262	18	1.75	78	7.60
1904.....	11,270	18	1.60	90	7.99
1905.....	12,110	12	.99	125	10.32
1906.....	13,317	16	1.20	77	5.78
Total, 5 years, 1897 to 1901.....	41,633	38	.91	237	5.69
Total, 5 years, 1902 to 1906.....	56,444	73	1.29	468	8.11
Total, 10 years, 1897 to 1906.....	98,077	111	1.13	695	7.09

SPECIFIC ACCIDENT LIABILITY IN RAILWAY SERVICE.

The groups of railway employees, as defined by the Interstate Commerce Commission, are much too large to warrant safe conclusions regarding the accident risk in the more important specified occupations. The industrial mortality statistics of the Prudential Insurance Company, as exhibited at the St. Louis and Jamestown expositions, are for the time being more useful for practical purposes and are more conclusive. Out of 171 deaths of railway conductors during the ten years ending with 1906, 50, or 29.2 per cent, were from accidents. The proportionate mortality from accidents in this occupation at ages 15 to 24 was 50.0 per cent, at ages 25 to 34 it was 42.9 per cent, at ages 35 to 44 it was 31.0 per cent, at ages 45 to 54 it was 22.7 per cent, and at ages 55 to 64 it was 17.6 per cent. Among railway engineers there occurred 142 deaths, of which 42, or 29.6 per cent, were from accidents. The proportionate mortality was 40.0 per cent at ages 15 to 24, 61.9 per cent at ages 25 to 34, 37.9 per cent at ages 35 to 44, 25.0 per cent at ages 45 to 54, 19.5 per cent at ages 55 to 64, and 6.7 per cent at ages 65 to 74. There occurred 207 deaths of railway firemen, of which 111, or 53.6 per cent, were from accidents. The proportionate mortality was 64.8 per cent at ages 15 to 24, 58.9 per cent at ages 25 to 34, 43.5 per cent at ages 35 to 44, and 14.3 per cent at ages 45 to 54. Above this age the numbers are too small for a safe generalization. Among railway brakemen, both passenger and

freight, there occurred 917 deaths, of which 630, or 68.7 per cent, were from accidents. The proportionate mortality was 83.4 per cent at ages 15 to 24, 69.6 per cent at ages 25 to 34, 52.7 per cent at ages 35 to 44, 48.1 per cent at ages 45 to 54, and 29.6 per cent at ages 55 to 64. Among railway flagmen and switchmen there occurred 704 deaths, of which 208, or 29.5 per cent, were from accidents. The proportionate mortality was 61.5 per cent at ages 15 to 24, 50 per cent at ages 25 to 34, 34.9 per cent at ages 35 to 44, 25.5 per cent at ages 45 to 54, 20.6 per cent at ages 55 to 64, 14.1 per cent at ages 65 to 74, and 6.7 per cent at ages 75 to 84. There occurred 216 deaths of railway gatemen, of which 33, or 15.3 per cent, were from accidents. The proportionate mortality was 11.1 per cent at ages 25 to 34, 12.0 per cent at ages 35 to 44, 24.1 per cent at ages 45 to 54, 19.7 per cent at ages 55 to 64, and 12.5 per cent at ages 65 to 74. Among railway freight handlers there occurred 193 deaths, of which 30, or 15.5 per cent, were from accidents. The details of the accident mortality of conductors, engineers, and firemen are given below, but additional data for other occupations in the railway service are given in the appendix, Tables XII to XV.

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY CONDUCTORS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	6	3	50.0
25 to 34 years.....	49	21	42.9
35 to 44 years.....	42	13	31.0
45 to 54 years.....	44	10	22.7
55 to 64 years.....	17	3	17.6
65 years or over.....	13		
Total.....	171	50	29.2

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY ENGINEERS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	5	2	40.0
25 to 34 years.....	21	13	61.9
35 to 44 years.....	29	11	37.9
45 to 54 years.....	28	7	25.0
55 to 64 years.....	41	8	19.5
65 years or over.....	18	1	5.6
Total.....	142	42	29.6

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY FIREMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	71	46	64.8
25 to 34 years.....	90	53	58.9
35 to 44 years.....	23	10	43.5
45 to 54 years.....	14	2	14.3
55 to 64 years.....	4		
65 years or over.....	5		
Total.....	207	111	53.6

THE RAILWAY ACCIDENT PROBLEM.

Railroad accidents to employees have within recent years attracted considerable attention. It is one of the most important occupations, indispensable to the needs of the nation, but in which, at the same time, the risk to life, health, and well-being is one of the most serious met with in industrial employments. The evidence is overwhelming that a large number of railroad casualties are preventable, but while much has been published upon the subject, no thoroughly qualified inquiry into the accident hazard of individual employments has ever been made, either by the Interstate Commerce Commission or the numerous State railroad commissions. Such an inquiry would emphasize the very serious risk in certain well-defined occupations, which, as made evident by insurance mortality experience, falls most heavily upon the economically most important period of life—that is, ages under 45.^(a)

ACCIDENTS IN TRANSPORTATION BY WATER.

ACCIDENTS IN NAVIGATION.

The accident risk of navigation is at present but very imperfectly known for the merchant marine and the fisheries of the United States. The census of 1900 returned 3,125 deaths from drowning among 28,073 accidental deaths of males 15 years of age or over, or 11.13 per cent, but how many of these deaths were the result of employment in navigation is not known. The annual report of the Supervising Inspector-General of the Steamboat-Inspection Service returned the number of lives lost, so far as reported in steamboat navigation, as 505 during 1907, but the return includes both employees and passen-

^a For a further discussion of fatal accidents to railway employees by the writer, see the issues of *The Spectator*, New York, for December 5 and 19, 1895, and January 2, 1896.

gers. Of the 505 lives lost as the result of accidents in steam navigation, 193 were the result of collision; 129 of accidental drowning; 55 because of snags, wrecks, and sinking; 31 because of fire; 27 because of explosion or accidental escape of steam; 4 because of accidents to machinery; 3 because of breaking of steam pipes, etc., and 63 from miscellaneous causes. The classification is a very imperfect one, and does not afford a clear insight into the navigation accident problem. It would be advisable to consolidate the data for a period of years and to make a more critical analysis of the returns. At present the specific occupation accident risk in navigation is practically ignored in the reports. It is also quite probable that the returns are more or less defective, and that the true mortality from navigation casualties is much greater than the accident liability as indicated by the reports. A clear distinction should also be made between accidents to employees and others, in conformity to the practice of the Interstate Commerce Commission.

NAVIGATION ACCIDENTS IN GREAT BRITAIN.

The United States Life-Saving Service also reports upon the subject, but without distinction of passengers and crews lost through marine casualties or saved through the efforts of the service. The most conclusive statistical data are the English mortality returns for the three years ending with 1902, which give a fluctuating accident rate of from 3.06 to 4.19 per 1,000 per annum, according to age. According to these returns, at ages 15 to 19 among seamen, the fatal accident rate was 3.75 per 1,000, at ages 20 to 24 it was 3.24, at 25 to 34 it was 3.06, at 35 to 44 it was 4.19, at 45 to 54 it was 4.14, at 55 to 64 it was 4.05, and at 65 or over it was 3.44 per 1,000. Much valuable additional information is also contained in the annual reports to the registrar-general by the Marine Department of the British Board of Trade. Out of 2,303 deaths from all causes among seamen during the fiscal year 1905, 1,159 were from disease, 610 from wrecks or casualties, and 354 from other accidents. The corresponding death rates were 9.8 per 1,000 for all causes, 4.9 for disease, 2.6 for deaths caused by wrecks or casualties, and 2.3 by other accidents. Some very suggestive facts are disclosed by the following official table that clearly emphasize the need for similar information for the United States:

NUMBER OF FATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES AMONG SEAMEN IN THE UNITED KINGDOM, BY YEARS, 1897 TO 1906.

[From the Sixty-ninth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. 78.]

Year ending June 30—	Number of seamen.	Deaths from accidents.			Fatal accident rate per 1,000 employees.
		Wrecks or casualties to vessels.	Other causes.	Total.	
1897.....	219,233	899	732	1,631	7.44
1898.....	218,016	489	660	1,130	5.22
1899.....	219,353	1,081	662	1,743	7.95
1900.....	221,107	769	667	1,436	6.49
1901.....	224,546	844	670	1,514	6.74
1902.....	225,443	775	621	1,396	6.19
1903.....	230,161	501	643	1,144	4.97
1904.....	223,482	481	581	1,062	4.55
1905.....	234,577	610	534	1,144	4.88
1906.....	237,811	574	637	1,211	5.09
Total, 5 years, 1897 to 1901.....	1,102,284	4,082	3,381	7,463	6.77
Total, 5 years, 1902 to 1906.....	1,161,474	2,941	3,016	5,957	5.13
Total, 10 years, 1897 to 1906.....	2,263,758	7,023	6,397	13,420	5.93

NUMBER OF FATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES AMONG SEAMEN IN STEAM AND SAIL NAVIGATION IN THE UNITED KINGDOM, BY YEARS, 1897 TO 1906.

[From the Sixty-ninth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. 78.]

Year.	Sailing vessels.			Steam vessels.		
	Number of employees.	Fatal accidents.		Number of employees.	Fatal accidents.	
		Number.	Rate per 1,000 employees.		Number.	Rate per 1,000 employees.
1897.....	53,267	680	12.77	165,966	951	5.73
1898.....	49,858	486	9.75	168,158	653	3.88
1899.....	46,553	625	13.43	172,630	1,118	6.47
1900.....	43,356	498	11.49	177,751	938	5.28
1901.....	41,151	679	16.50	183,394	835	4.55
1902.....	38,400	479	12.47	187,043	917	4.90
1903.....	36,406	371	10.19	193,755	773	3.99
1904.....	34,748	477	13.73	198,734	585	2.94
1905.....	32,466	433	13.34	202,111	711	3.52
1906.....	30,204	430	14.24	207,607	781	3.76
Total, 5 years, 1897 to 1901.....	234,185	2,968	12.67	868,099	4,495	5.18
Total, 5 years, 1902 to 1906.....	172,224	2,190	12.72	989,250	3,767	3.81
Total, 10 years, 1897 to 1906.....	406,409	5,158	12.69	1,857,349	8,262	4.45

A valuable distinction is made in these tables in the return of persons employed in navigation by sail and navigation by steam in the United Kingdom, the former invariably showing a much higher general death rate and accident rate than the latter. Among persons employed in navigation by sail the rate during 1906 was 19.1 per 1,000 from all causes, 4.8 from disease, 9.5 from wrecks and casualties, and 4.8 from accidents other than wrecks and casualties. Among persons employed in the navigation of steam vessels during 1906, the mortality from all causes was 9.2, from disease 5.4, from wrecks or casualties

1.4, and from accidents other than wrecks or casualties 2.4 per 1,000. Among persons employed in the navigation of sailing vessels, the accident rate from wrecks or casualties during the last fifteen years has been as high as 12.2 and as low as 5.1 per 1,000. Among persons employed in the navigation of steam vessels the accident rate from wrecks or casualties has been as high as 3.9 and as low as 0.9 per 1,000.

NAVIGATION ACCIDENTS IN THE UNITED STATES.

For the United States we have no corresponding data. The extent of our merchant marine, however, is emphasized by the fact that during 1906 the number employed in transportation by water was 140,929, of which 60.2 per cent were employed on freight and passenger vessels, 3.2 per cent on ferryboats, 14.8 per cent on tugs and other towing vessels, 14.3 per cent on unrigged craft, 5.5 per cent on yachts, and 2.0 per cent on other vessels.^(a) The only conclusive data regarding the accident liability in American shipping are the statistics of the industrial insurance company, previously referred to, and which, among other data, were exhibited at the Jamestown Exposition. Out of 505 deaths of sailors and mariners, except captains, 89, or 17.6 per cent, were from accidents. The proportionate mortality at ages 15 to 24 was 50.7 per cent, at 25 to 34 it was 17.3 per cent, at 35 to 44 24.2 per cent, at 45 to 54 12.7 per cent, at 55 to 64 10.2 per cent, and at 65 to 74 it was 4.9 per cent. Out of 126 deaths of sea captains, chiefly engaged in deep sea navigation, 16 deaths were from accident, or 12.7 per cent of the mortality from all causes. Out of 230 deaths of captains not otherwise specified 39, or 17.0 per cent, were from accidents. The proportionate mortality was quite high at ages under 35, and somewhat less at ages over 35, fairly corresponding to the accident liability of sailors and mariners. The number of deaths is not sufficiently large to warrant final conclusions regarding the accident liability by divisional periods of life. Out of 468 deaths of boatmen 94 died from accident, or 20.1 per cent of the mortality from all causes. The proportionate mortality from accident was much higher at ages under 35 than at ages over 35. Out of 68 deaths of bridge tenders, which may properly be included in marine risks, 16, or 23.5 per cent, died from accidents. And, finally, out of 125 deaths of riggers, 22, or 17.6 per cent, were from accidents. The numbers, while fairly indicative of general conditions, are not sufficiently large to warrant final conclusions as to the accident liability by divisional periods of life. The details of the mortality from accidents among captains and sailors are given below, but additional data for other employees in navigation are given in the appendix, Tables XVI and XVII.

^a See Census Bulletin No. 91, on Transportation by Water in 1906, p. 53.

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG SAILORS AND MARINERS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	71	36	50.7
25 to 34 years.....	81	14	17.3
35 to 44 years.....	62	15	24.2
45 to 54 years.....	71	9	12.7
55 to 64 years.....	108	11	10.2
65 years or over.....	111	4	3.6
Total.....	* 505	89	17.6

* Including one, age unknown.

NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG SEA CAPTAINS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	2	1	50.0
25 to 34 years.....	3	3	100.0
35 to 44 years.....	8	.....	.....
45 to 54 years.....	26	8	30.8
55 to 64 years.....	30	3	10.0
65 years or over.....	57	1	1.8
Total.....	126	16	12.7

• **NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG CAPTAINS (NOT SPECIFIED), BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.**

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	3	2	66.6
25 to 34 years.....	9	5	55.6
35 to 44 years.....	27	5	18.5
45 to 54 years.....	54	16	29.6
55 to 64 years.....	60	9	15.0
65 years or over.....	76	2	2.6
Total.....	* 230	39	17.0

* Including one, age unknown.

ACCIDENTS AT DOCKS AND WHARVES.

A large number of men, including stevedores, warehousemen, freight handlers, etc., are employed at docks and wharves in connection with shipping. There are no useful statistical data regarding the accident liability of this class of labor in the United States, but English returns are quite conclusive. Out of 4,551 accidents among persons employed at docks and wharves, from all causes, reported to certifying surgeons during the four years ending with 1903 for the United Kingdom, 535, or 11.76 per cent, were fatal. Some data of value are also included in the report of the registrar-general of England and Wales on occupation mortality for the three years ending with 1902. The general accident rate among dock and wharf laborers was 1.38 per 1,000, increasing gradually from the younger to the older ages. At ages 20 to 24 the rate was 0.70, at 25 to 34 it was 1.15, at 35 to 44 it was 1.28, at 45 to 54 it was 1.82, at 55 to 64 it was 2.34, and at 65 or over it was 2.92 per 1,000. The occupation was made the subject of a special report upon *The Causation and Prevention of Accidents at Docks, Wharves and Quays*, printed as a parliamentary document in 1900. According to this report, in 1899 there occurred 115 fatal accidents in connection with labor at docks, wharves, and quays, of which 19 were caused by cranes and other lifting tackle, 13 by other machinery moved by power, 1 by machinery not moved by mechanical power, 2 by explosion, 1 by escape of gas, 45 by falls, and 34 by causes not included in the foregoing enumeration. The report is a valuable contribution to the literature of industrial accident prevention. There are no corresponding data regarding this occupation for the United States.^a)

ACCIDENTS IN THE FISHERIES.

The loss of life in the American fisheries is also a matter of mere conjecture. The only statistical data of value are the annual estimates of the loss of life in the Gloucester fisheries, which employ approximately 4,200 men. During the ten years ending with 1906 the number of lives lost was 516, or at the rate of 11.7 per 1,000 per annum. The fatality rate during the last few years has been considerably below the average, having been as high as 18.2 per 1,000 during 1902, and as low as 4.8 per 1,000 during 1906. The accident risk naturally varies considerably according to the fishing

^a Another interesting and most valuable report has recently been published upon deep-water diving, an indispensable occupation regarding which it is of much importance to obtain more definite and conclusive information than is at present available for this or other countries. (Report of a committee appointed by the Lords Commissioners of the Admiralty to consider and report upon the Conditions of Deep-Water Diving. London, 1907.)

grounds, whether on the high seas, lakes, rivers, etc. English data are more definite and conclusive. The conditions, however, under which the fisheries are carried on are quite different. The English data for the three years ending 1902 return an accident liability of 1.89 per 1,000. The rate fluctuates somewhat according to age. According to the Prudential industrial experience, as exhibited at the Jamestown Exposition, out of 162 deaths from all causes among fishermen, 24, or 14.8 per cent, were from accident. The proportionate mortality was 45.5 per cent at ages 15 to 24, 36.8 per cent at 25 to 34, 23.8 per cent at 35 to 44, 10 per cent at 45 to 54, 7.5 per cent at 55 to 64, and 5.1 per cent at 65 to 74. Out of 178 deaths among men employed in the oyster fisheries 14, or 7.9 per cent, were from accident. Details of accident frequency are given in the table below, derived from data furnished by The Procter Brothers Company, of Gloucester, Mass.

NUMBER OF FATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN THE FISHERIES OF GLOUCESTER, MASS., BY YEARS, 1897 TO 1906.

[From list of vessels belonging to the district of Gloucester, 1906.]

Year.	Estimated average number of employees.	Lives reported lost.	
		Number.	Rate per 1,000 employees.
1897.....	4,500	63	14.0
1898.....	4,500	62	13.8
1899.....	4,500	66	15.1
1900.....	4,500	53	11.8
1901.....	4,500	46	10.2
1902.....	4,513	82	18.2
1903.....	4,400	76	17.3
1904.....	4,300	25	5.8
1905.....	4,232	21	5.0
1906.....	4,200	20	4.8
Total, 5 years, 1897 to 1901.....	22,500	292	13.0
Total, 5 years, 1902 to 1906.....	21,645	224	10.3
Total, 10 years, 1897 to 1906.....	44,145	516	11.7

ACCIDENTS IN THE LIFE-SAVING SERVICE.

There is another occupation which may properly be included in this brief survey of the marine-accident risk, and that is the accident liability of life savers. During the ten years ending with 1906 there occurred in this employment 17 deaths from accident, equivalent to a rate of 0.9 per 1,000. The rate has been as high as 3.8 per 1,000, in 1902, while during some years no death from accident has occurred. It is quite probable that the true accident liability of life savers as the result of their employment is higher than the indicated average accident risk for the last ten years. Quite a number of deaths result from exposure and overexertion, which are properly to be considered as occupation accidents and which, if included, would probably

increase the rate to 1.2 per 1,000 per annum. The details of accidents in this employment are set forth in the following table:

NUMBER OF FATAL ACCIDENTS AND OF DEATHS FROM ALL CAUSES AND RATE PER 1,000 EMPLOYEES IN THE UNITED STATES LIFE-SAVING SERVICE, BY YEARS, 1897 TO 1906.

[Compiled from the reports of the Life-Saving Service and the supplementary "List of Persons who have died in the Life-Saving Service, as shown by the records of the Treasury Department."]

Year ending June 30—	Estimated average number of employees.	Fatal accidents.		Deaths from all causes.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	1,995	.....	.....	5	2.5
1898.....	2,036	1	0.5	2	1.0
1899.....	2,050	2	1.0	6	2.9
1900.....	2,052	.....	.....	13	6.3
1901.....	2,071	1	.5	5	2.4
1902.....	2,091	8	3.8	17	8.1
1903.....	2,108	1	.5	11	5.2
1904.....	2,092	3	1.4	6	2.9
1905.....	2,137	1	.5	8	3.7
1906.....	2,160	.....	.....	6	2.8
Total, 5 years, 1897 to 1901.....	9,404	4	.4	31	3.3
Total, 5 years, 1902 to 1906.....	10,588	13	1.2	48	4.5
Total, 10 years, 1897 to 1906.....	19,992	17	.9	79	4.0

CAUSES OF ACCIDENTS.

It has been necessary to omit any extended discussion of the causes of accidents and rational methods of their prevention as not strictly within the scope of this article. The analysis of industrial accidents in New York State, covering the years 1901 to 1906, brings out the fact that more than half the casualties and accidents in industry are the immediate result of machinery in motion. Of 864 fatal accidents, 475, or 55.0 per cent, were caused by machinery. Most of the fatal accidents in this group were caused by gearing, belts, shafting, pulleys, elevators, hoists, and cranes. Of the fatal accidents not caused by machinery, the majority were caused by hot liquids, acids, steam, explosives, collapse of buildings, falling objects, fall of persons, vehicles, and animals. Of the nonfatal accidents, 54.6 per cent were caused by machinery and 45.4 per cent were due to other causes. The analysis by industries is exceptionally interesting, and it is a matter of regret that this classification of accidents by causes and industries should have been discontinued.^a The details of the analysis are given in the table below:

^a The bureau of factory inspection has recently decided to resume the compilation of industrial accident statistics by industries, and the annual report for 1908 will again contain the statistics discontinued in 1905.

NUMBER AND PER CENT OF FATAL AND OF NONFATAL ACCIDENTS IN THE INDUSTRIES OF NEW YORK STATE, BY CAUSES, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1906.]

Causes.	Fatal accidents.		Nonfatal accidents.		Total accidents.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Gearing, belts, shafting, pulleys, etc.....	180	17.4	2,557	6.7	2,707	6.9
Elevators, hoists, cranes, etc.....	198	22.9	2,625	6.8	2,823	7.2
Saws, planes, lathes.....	36	4.2	3,400	8.9	3,436	8.8
Presses, stamping machines.....	6	.7	2,399	6.2	2,405	6.1
Emery wheels and buffers.....	8	.9	838	2.2	846	2.1
Textile machinery.....	5	.6	1,595	4.2	1,600	4.1
Other machines and machine tools.....	72	8.3	7,544	19.6	7,616	19.4
Total machinery.....	475	55.0	20,956	54.6	21,433	54.6
Hand tools (axes, saws, hammers).....			1,680	4.4	1,680	4.3
Explosives.....	51	5.9	301	.8	352	.9
Hot liquids, acids, steam, etc.....	99	11.5	2,476	6.5	2,575	6.6
Collapse of buildings and falling objects.....	84	9.7	3,031	7.9	3,115	7.9
Fall of persons.....	66	7.6	2,263	5.9	2,329	5.9
Handling of merchandise.....	20	2.3	3,513	9.1	3,533	9.0
Vehicles and animals.....	18	2.1	912	2.4	930	2.4
All other causes.....	51	5.9	3,246	8.4	3,297	8.4
Total other than machinery.....	389	45.0	17,422	45.4	17,811	45.4
Grand total.....	864	100.0	38,380	100.0	39,244	100.0

THE PROBLEM OF ACCIDENT PREVENTION.

The present state of American industrial accident statistics does not warrant final conclusions regarding the true rate of the risk in different employments nor of the approximate determination of the occupation hazard, by degree of injury, for the more important industrial employments. Most of the present information is limited to the facts of accidental death or injuries generally, and while such data have their value they require to be made more specific to throw light upon the larger problem of accident prevention and workingmen's compensation for industrial casualties. The importance of such information has been clearly brought out in an address on "Valuation, in Actions for Damages for Negligence, of Human Life, Destroyed or Impaired," by Miles M. Dawson, before the International Actuarial Congress in 1903.^(a) For insurance and other purposes, however, the data presented in this article will prove useful and emphasize the more dangerous trades and the present tendency toward an increase or decrease in the risk of accidental injury in the more important dangerous occupations.^(b) To the workingman himself there is no more important problem than the most effective

^a Proceedings Fourth International Congress of Actuaries, 1904, Vol. I, p. 929.

^b A useful and suggestive work on the prevention of accidents in industry has been published by the German Association of Trade Unions entitled: Unfallverhütungsvorschriften, herausgegeben vom Verbands Deutscher Berufsgenossenschaften, Berlin, 1900. Mention may also be made of a valuable treatise on definition of invalidity under the title: Der Begriff der Erwerbsunfähigkeit auf dem Gebiete des Versicherungswesens, by H. Siefert, Berlin, 1906.

protection of his life and health against the accident risk inherent in, or incidental to, the occupation in which he is employed. Much that could be done for his protection is still neglected, though many important and far-reaching improvements have been introduced in factory practice during the last decade. Accurate statistics alone can furnish a reasonable basis for reform. The possibilities for successful accident prevention have been clearly demonstrated in the experience of foreign countries and the exhibition of safety devices of the American Institute for Social Service.

SOCIAL ASPECTS OF THE ACCIDENT PROBLEM.

The facts presented in this article warrant the conclusion that the casualty risk in American industries is a most serious one, toward the reduction of which every effort should be made. At least a more earnest effort should be made to profit by the industrial methods of European countries. Granting that the underlying conditions are often quite different, and that many of our industrial accidents are the result of ignorance, reckless indifference, or carelessness, the fact remains that an immense amount of human life is wasted and a vast amount of injury is done to health and strength, with resulting physical impairment, which has a very considerable economic value to the nation as a whole. If, for illustration, the accident liability of employees in coal mines in the United States were reduced from 3.10 per 1,000, which was the average annual rate for the period 1897-1906,^(a) to 1.29 per 1,000, the average rate in the United Kingdom for the same period, ^(b) the annual saving in human life would be 915. If the rate of casualties of railway employees in this country were reduced from 2.50 per 1,000, which was the average annual rate for 1897-1906,^(c) to 0.98 per 1,000, the average for the German Empire for the same period,^(d) the annual saving would be 1,735 valuable human lives. As stated at the outset, upon a conservative estimate, the total mortality from accidents in the United States among adult male wage-earners is between 30,000 and 35,000, of which it should not be impossible to save at least one-third and perhaps one-half by intelligent and rational methods of factory inspection, legislation, and control. In addition there were approximately not much less than two million nonfatal accidents, that not only involve a vast amount of human suffering and sorrow, but materially curtail the normal longevity among those exposed to the often needless risk of industrial casualties.

^a Computed from the mine inspectors' reports of the various States.

^b Computed from statistics included in the annual reports of the Home Office entitled "Mines and Quarries: General Reports and Statistics, London."

^c Computed from statistics shown in the Report of the Interstate Commerce Commission, Statistics of Railways, 1906, pp. 42, 109.

^d Computed from Statistisches Jahrbuch für das Deutsche Reich, 1908, pp. 85 88.

APPENDIX.

TABLE I.—NUMBER AND PER CENT OF ACCIDENTS IN THE METAL SMELTING AND REFINING INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations	26	13.1
Burns.....	48	24.2
Cuts, etc.....	30	15.2
Bruises.....	37	18.7
Sprains and dislocations.....	5	2.5
Fractures.....	21	10.6
Other injuries.....	9	4.6
Total, temporary disablement	176	88.9
Permanent disablement:		
Partial or complete loss of eyes.....	1	.5
Partial or complete loss of limbs.....	1	.5
Partial or complete loss of hands or feet.....	1	.5
Other injuries.....	10	5.1
Total, permanent disablement	13	6.6
Degree of injury not stated	1	.5
Fatal accidents.....	8	4.0
Total accidents of all degrees.....	198	100.0

TABLE II.—NUMBER AND PER CENT OF ACCIDENTS IN ROLLING MILLS AND TIN PLATE INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations	92	15.1
Burns.....	87	14.2
Cuts, etc.....	147	24.1
Bruises.....	100	16.4
Sprains and dislocations.....	22	3.6
Fractures.....	40	6.5
Other injuries.....	35	5.7
Total, temporary disablement.....	523	85.6
Permanent disablement:		
Partial or complete loss of eyes.....	4	.6
Partial or complete loss of limbs.....	6	1.0
Partial or complete loss of hands or feet.....	3	.5
Internal injuries.....	2	.3
Other injuries.....	45	7.4
Total, permanent disablement	60	9.8
Degree of injury not stated	3	.5
Fatal accidents.....	25	4.1
Total accidents of all degrees.....	611	100.0

TABLE III.—NUMBER AND PER CENT OF ACCIDENTS IN THE MANUFACTURE OF STEAM ENGINES, BOILERS, PUMPS, ETC., IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	505	17.3
Burns.....	116	4.0
Cuts, etc.....	686	24.0
Bruises.....	737	25.3
Sprains and dislocations.....	122	4.2
Fractures.....	201	6.9
Other injuries.....	179	6.2
Total, temporary disablement.....	2,558	87.9
Permanent disablement:		
Partial or complete loss of eyes.....	15	.5
Partial or complete loss of limbs.....	9	.3
Partial or complete loss of hands or feet.....	11	.4
Internal injuries.....	12	.4
Other injuries.....	270	9.3
Total, permanent disablement.....	317	10.9
Degree of injury not stated.....	3	.1
Fatal accidents.....	33	1.1
Total accidents of all degrees.....	2,911	100.0

TABLE IV.—NUMBER AND PER CENT OF ACCIDENTS IN OTHER METAL INDUSTRIES IN NEW YORK STATE, BY DEGREE OF INJURY, FOR THE PERIOD 1901 TO 1905.

[Compiled from the annual reports of the New York Bureau of Factory Inspection, 1901 to 1905.]

Degree of accidental injury.	Accidents reported.	
	Number.	Per cent.
Temporary disablement:		
Lacerations.....	949	20.0
Burns.....	322	6.8
Cuts, etc.....	1,077	22.8
Bruises.....	673	14.2
Sprains and dislocations.....	155	3.3
Fractures.....	298	6.3
Other injuries.....	266	5.6
Total, temporary disablement.....	3,740	79.0
Permanent disablement:		
Partial or complete loss of eyes.....	29	.6
Partial or complete loss of limbs.....	11	.2
Partial or complete loss of hands or feet.....	38	.8
Internal injuries.....	16	.3
Other injuries.....	822	17.4
Total, permanent disablement.....	916	19.3
Degree of injury not stated.....	11	.2
Fatal accidents.....	69	1.5
Total accidents of all degrees.....	4,736	100.0

TABLE V.—NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN COAL MINES OF ILLINOIS, BY YEARS, 1897 TO 1906.

[Compiled from the Annual Coal Reports of the Illinois Bureau of Labor Statistics.]

Year	Number of employ-ees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 em-ployees.	Number.	Rate per 1,000 em-ployees.
1897.....	33,788	69	2.04	518	15.33
1898.....	35,026	75	2.14	438	12.60
1899.....	36,991	84	2.27	597	16.14
1900.....	39,384	94	2.39	611	15.51
1901.....	44,143	99	2.24	422	9.56
1902.....	46,005	99	2.15	406	8.83
1903.....	49,814	156	3.13	410	8.23
1904.....	54,774	157	2.87	507	9.26
1905.....	59,230	199	3.36	535	9.03
1906.....	62,283	155	2.49	480	7.71
Total, 5 years, 1897 to 1901.....	189,332	421	2.22	2,586	13.66
Total, 5 years, 1902 to 1906.....	272,106	766	2.82	2,338	8.59
Total, 10 years, 1897 to 1906.....	461,438	1,187	2.57	4,924	10.67

TABLE VI.—NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN COAL MINES OF MISSOURI, BY YEARS, 1897 TO 1906.

[Compiled from the Annual Reports of the Missouri Bureau of Mines and Mine Inspection.]

Year.	Number of employ-ees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 em-ployees.	Number.	Rate per 1,000 em-ployees.
1897.....	6,557	8	1.22	23	3.51
1898.....	7,391	9	1.22	27	3.65
1899.....	7,792	14	1.80	23	2.95
1900.....	7,659	10	1.31	23	3.01
1901.....	9,226	15	1.63	16	1.73
1902.....	9,181	10	1.09	19	1.96
1903.....	9,177	17	1.85	22	2.40
1904.....	10,124	11	1.09	16	1.58
1905.....	10,415	11	1.06	26	3.46
1906.....	9,679	16	1.65	37	2.79
Total, 5 years, 1897 to 1901.....	38,616	56	1.45	112	2.90
Total, 5 years, 1902 to 1906.....	48,566	65	1.34	119	2.45
Total, 10 years, 1897 to 1906.....	87,182	121	1.39	231	2.65

TABLE VII.—NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN COAL MINES OF COLORADO, BY YEARS, 1897 TO 1906.

[Compiled from the Biennial Reports of the Inspector of Coal Mines of Colorado.]

Year.	Number of em-ployees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 em-ployees.	Number.	Rate per 1,000 em-ployees.
1897.....	7,016	35	4.99	54	7.70
1898.....	7,425	24	3.23	72	9.70
1899.....	7,321	42	5.74	108	14.75
1900.....	7,271	29	3.99	70	9.63
1901.....	8,000	55	6.88	81	10.13
1902.....	9,000	73	8.11	105	11.67
1903.....	10,296	40	3.89	110	10.68
1904.....	10,769	89	8.26	118	10.96
1905.....	11,891	59	4.96	100	8.41
1906.....	12,030	88	7.32	160	13.30
Total, 5 years, 1897 to 1901.....	37,033	185	5.00	385	10.40
Total, 5 years, 1902 to 1906.....	53,986	349	6.46	593	10.98
Total, 10 years, 1897 to 1906.....	91,019	534	5.87	978	10.74

TABLE VIII.—NUMBER OF FATAL AND OF NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN IRON ORE MINES (INSIDE AND OUTSIDE WORK) OF DICKINSON COUNTY, MICH., BY YEARS, 1897 TO 1906.

[From Annual Reports of the Inspector of Mines, Dickinson County, Michigan.]

Year.	Inside employees.			Outside employees.		
	Number of employees.	Number of fatal accidents.	Rate per 1,000 employees.	Number of employees.	Number of fatal accidents.	Rate per 1,000 employees.
1897.....	1,532	8	5.22	629	2	3.18
1898.....	1,801	9	5.00	669	2	2.99
1899.....	2,097	6	2.86	778	3	3.87
1900.....	2,314	15	6.48	899	4	4.45
1901.....	2,604	24	9.22	863	3	3.48
1902.....	2,864	8	2.79	1,079	2	1.85
1903.....	2,789	16	5.74	1,215	.....	.....
1904.....	1,950	6	3.08	1,098	3	2.73
1905.....	2,221	8	3.60	991	1	1.01
1906.....	2,233	11	4.93	1,258	4	3.18
Total, 5 years, 1897 to 1901.....	10,348	62	5.99	3,836	14	3.65
Total, 5 years, 1902 to 1906.....	12,057	49	4.06	5,639	10	1.77
Total, 10 years, 1897 to 1906.....	22,405	111	4.95	9,475	24	2.53

TABLE IX.—NUMBER OF FATAL AND NONFATAL ACCIDENTS AND RATE PER 1,000 EMPLOYEES IN METAL MINES IN MONTANA, BY YEARS, 1897 TO 1906.

[Compiled from the Annual Reports of the Inspector of Mines of Montana.]

Year.	Number of employees.	Fatal accidents.		Nonfatal accidents.	
		Number.	Rate per 1,000 employees.	Number.	Rate per 1,000 employees.
1897.....	9,825	52	5.29	29	2.95
1898.....	11,096	48	4.33	29	2.61
1899.....	12,316	49	3.98	22	1.79
1900.....	13,996	47	3.36	35	2.50
1901.....	12,078	35	2.90	33	2.73
1902.....	13,784	47	3.41	45	3.26
1903.....	14,175	39	2.75	50	3.53
1904.....	14,480	41	2.83	55	3.80
1905.....	14,680	48	3.27	41	2.79
1906.....	15,000	52	3.47	43	2.87
Total, 5 years, 1897 to 1901.....	59,311	231	3.89	148	2.50
Total, 5 years, 1902 to 1906.....	72,119	227	3.15	234	3.24
Total, 10 years, 1897 to 1906.....	131,430	458	3.48	382	2.91

TABLE X.—NUMBER OF INSIDE AND OF OUTSIDE EMPLOYEES IN QUARRIES IN THE UNITED KINGDOM, AND NUMBER AND RATE PER 1,000 OF FATAL ACCIDENTS TO SUCH EMPLOYEES, BY YEARS, 1897 TO 1906.

[From annual report of the Home Office on Mines and Quarries: General Report and Statistics, 1906, p. 46.]

Year.	Inside employees.			Outside employees.			Inside and outside employees.		
	Number.	Number killed.	Accident rate per 1,000 employees.	Number.	Number killed.	Accident rate per 1,000 employees.	Total number.	Total number killed.	Accident rate per 1,000 employees.
1897.....	58,845	93	1.58	64,525	30	0.46	123,370	123	1.00
1898.....	62,752	100	1.59	71,726	34	.47	134,478	134	1.00
1899.....	64,159	98	1.53	33,836	19	.56	97,995	117	1.19
1900.....	60,631	115	1.90	33,264	12	.36	93,895	127	1.35
1901.....	59,968	86	1.43	34,220	12	.36	94,188	98	1.04
1902.....	62,429	103	1.65	34,679	16	.46	97,108	119	1.23
1903.....	62,921	84	1.24	35,234	11	.31	98,155	95	.97
1904.....	62,249	96	1.54	35,325	16	.45	97,577	112	1.15
1905.....	59,973	85	1.42	34,841	14	.40	94,819	99	1.04
1906.....	56,365	85	1.46	33,131	12	.36	91,516	97	1.06
Total, 5 years, 1897 to 1901.	306,355	492	1.61	237,571	107	.45	543,926	599	1.10
Total, 5 years, 1902 to 1906.	306,932	453	1.48	173,213	69	.40	479,175	522	1.09
Total, 10 years, 1897 to 1906.	612,317	945	1.54	410,784	176	.43	1,023,101	1,121	1.10

TABLE XI.—NUMBER OF FATAL ACCIDENTS IN QUARRIES IN THE UNITED KINGDOM, BY YEARS AND CAUSES, 1897 TO 1906.

[From Eleventh Abstract of Labor Statistics of the United Kingdom, p. 117.]

Year.	Number of deaths of persons—						Accident rate per 1,000 employees.
	Inside the quarry—			Outside the quarry—		Total.	
	By falls of ground.	By blasting.	Miscellaneous.	By machinery.	Miscellaneous.		
1897.....	51	13	29	10	20	123	1.00
1898.....	44	10	46	15	19	134	1.00
1899.....	44	8	46	8	11	117	1.19
1900.....	53	13	49	2	10	127	1.35
1901.....	39	15	32	4	8	98	1.04
1902.....	44	16	43	6	10	119	1.23
1903.....	44	8	32	4	7	95	.97
1904.....	38	11	47	1	15	112	1.15
1905.....	33	15	37	3	11	99	1.04
1906.....	39	11	35	1	11	97	1.06

TABLE XII.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY BRAKEMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	325	271	83.4
25 to 34 years.....	355	247	69.6
35 to 44 years.....	150	79	52.7
45 to 54 years.....	62	25	40.1
55 to 64 years.....	27	8	29.6
65 years or over.....	8	.....	.....
Total.....	917	630	68.7

TABLE XIII.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY FLAGMEN AND SWITCHMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	52	32	61.5
25 to 34 years.....	114	57	50.0
35 to 44 years.....	106	37	34.9
45 to 54 years.....	98	25	25.5
55 to 64 years.....	175	36	20.6
65 years or over.....	159	21	13.2
Total.....	704	208	29.5

TABLE XIV.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY GATEMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1907.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	4	.....	.....
25 to 34 years.....	9	1	11.1
35 to 44 years.....	25	3	12.0
45 to 54 years.....	29	7	24.1
55 to 64 years.....	66	13	19.7
65 years or over.....	83	9	10.8
Total.....	216	33	15.3

TABLE XV.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RAILWAY FREIGHT HANDLERS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	14	3	21.4
25 to 34 years.....	37	6	16.2
35 to 44 years.....	48	12	25.0
45 to 54 years.....	37	5	13.5
55 to 64 years.....	34	3	8.8
65 years or over.....	23	1	4.3
Total.....	193	30	15.5

INDUSTRIAL ACCIDENTS.

465

TABLE XVI.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG BOATMEN, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	22	12	54.6
25 to 34 years.....	85	21	24.7
35 to 44 years.....	72	13	18.1
45 to 54 years.....	87	27	31.0
55 to 64 years.....	102	15	14.7
65 years or over.....	100	6	6.0
Total.....	468	94	20.1

TABLE XVII.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG BRIDGE TENDERS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	3	3	100.0
25 to 34 years.....	4	1	25.0
35 to 44 years.....	11	3	27.3
45 to 54 years.....	13	1	7.7
55 to 64 years.....	26	7	26.9
65 years or over.....	11	1	9.1
Total.....	68	16	23.5

TABLE XVIII.—NUMBER OF DEATHS FROM ACCIDENTS COMPARED WITH NUMBER OF DEATHS FROM ALL CAUSES AMONG RIGGERS, BY AGE GROUPS, FOR THE PERIOD 1897 TO 1906.

[From mortality experience of an industrial insurance company.]

Age at death.	Deaths from all causes.	Deaths from accidents.	
		Number.	Per cent of deaths from all causes.
15 to 24 years.....	20	4	20.0
25 to 34 years.....	28	3	10.7
35 to 44 years.....	30	8	26.7
45 to 54 years.....	33	4	12.1
55 to 64 years.....	14	3	21.4
Total.....	125	22	17.6

MEXICAN LABOR IN THE UNITED STATES.

BY VICTOR S. CLARK, PH. D.

INTRODUCTION.

Within less than a decade there has been a large increase in the amount of Mexican labor employed in the United States; but more marked than the growth of numbers has been the increasing range of its distribution. As recently as 1900 immigrant Mexicans were seldom found more than a hundred miles from the border. Now they are working as unskilled laborers and as section hands as far east as Chicago and as far north as Iowa, Wyoming, and San Francisco. The number of different industries dependent upon Mexican labor is increasing. In some occupations Mexicans are rapidly displacing Japanese, Greeks, and even Italians. Lack of education and initiative confines most of these immigrants to the simpler forms of unskilled labor. They compete little, if at all, with what is called "white labor" in the Southwest. They work well and are contented in the desert, where Europeans and Orientals either become dissatisfied or prove unable to withstand the climate. Except in Texas and in California, few Mexicans become permanent residents, and even in those two States a majority are transient laborers who seldom remain more than six months at a time in this country. The volume of Mexican immigration, compared with that of Italians or Slavs upon the Atlantic coast, is still small, in spite of a recent increase. Complete statistics of those who cross the frontier are not kept, but the number does not exceed 100,000 per annum, and probably is not over 60,000. These people, however, are entering a sparsely settled territory with a great demand for labor. Their migration is having important economic effects in Mexico as well as in the United States. And it is becoming an agency of something approaching a social revolution among the Mexican laboring classes.

THE IMMIGRANT.

The Mexican who comes to the United States as a laborer is from the peon or from the tramp labor class of Mexico. The term "pelado," by which those migrating into Texas are known, signifies literally the man who has been stripped, a sort of intensified

"sans culottes," and indicates that the Mexicans crossing the lower Rio Grande come largely from the migratory laboring class of their own country. In California the Mexican laborers are known as "cholos," a word borrowed from Peru, where it applies to a certain type of Indian. It indicates nothing as to the original status of the immigrant. Probably most of the laborers entering the United States from El Paso or westward, with the exception of a few miners from Sonora and from Chihuahua, were originally in peonage, though they may have escaped from this relation some time before migrating to the north.

Mexicans of either of these classes are Indians, with a slight infusion of white blood. They are Indians in physique, temperament, character, and mentality. A person familiar with Mexico can tell the State or district a laborer hails from by the old tribal peculiarities of his underlying Indian stock. It is said that Mexicans have been unwittingly admitted to Indian schools in the United States without their nationality being known. And yet in almost any large group of Mexican laborers individuals are encountered who, in different surroundings, would easily pass for Europeans. By contact here and there with the upper classes of Mexico and with the older European culture that has given them their language and religion, these laborers have acquired a certain vivacity of expression and demeanor, and probably at least superficial habits of thought, that are largely foreign to the American Indian. Still, this Spanish manner varies in degree with different individuals, and with the immigrants as a body is less in evidence than the dull, docile patience of the Mexican Indian race.

The Mexicans who cross the border to work are either making their first trip to the United States or are making a second or third seasonal visit from the interior of Mexico or are of that big class of American-Mexican frontier residents who reside intermittently in either country. These last are less apt to travel widely or to work regularly, except during cotton-picking time in Texas and in Oklahoma; their migratory habits are not of recent origin, and they are not vacating old industries in Mexico to enter new occupations in the United States. The immigrant of interest is the one who has recently appeared in the field, coming from the central part of the Republic, leaving his ancestral home and callings, and ready to venture almost anywhere in search of work.

These immigrants appear at the border in sombrero, serape, and sandals, which, before crossing the river, they usually exchange for a suit of "American" clothing, shoes, and a less conspicuous hat. In fact, at Juarez and at El Paso a thriving trade of old clothes has sprung up to meet this demand.

SOURCE OF IMMIGRATION.

The source of most of this immigration is the group of States lying just north of the Valley of Mexico, and chiefly on the western and better-watered slope of the central plateau. This is the most fertile and densely populated portion of the Republic. These States are Jalisco (which is reputed to have the best laborers), Michoacan, Guanajuato, Aguas Calientes, and Zacatecas. Some labor moves northward along the National Railroad of Mexico to Laredo and to Eagle Pass from Queretaro and San Luis Potosi, which are adjoining States; but the chief migration at present is along the Mexican Central Railway, from the district mentioned to El Paso. South of this region the relatively high wages paid tropical plantation labor in Mexico, the greater distance and less direct communication to the north, and the attractions of the capital combine, with other inducements, to keep the laborers from emigrating in any considerable numbers to the United States.

Agriculture and mining are the main industries of this central district. Land is held mostly, though not exclusively, in large estates, and its chief value depends upon resident labor. Subordinate to the rights of the great proprietor are secondary forms of tenure, so well established by custom that the cultivator seems about as well protected by them as a holder in fee simple. When the railroads buy rights of way in Mexico, in many instances they have to acquire two practically independent titles to the same land, one from the "hacendado," the other from the Indian cultivator. The latter, in connection with his right to a specific tract of irrigated land, owns common rights—such as the privilege of pasturing a certain number of head of stock in the open fields. These cultivators are usually settled in villages along water courses. Whether these tenure customs are aboriginal or European in origin, they are now part of the life of the people, and ordinarily give permanence to the agricultural population in the parts of the Republic where they prevail. They explain such contradictory statements of the immigrant as that he belongs on such and such an "hacienda," and Señor So-and-so is his "patron;" and at the same time that he owns a piece of land and expects to return home in time to plant or harvest his crop.

These customary tenant rights probably modify and mitigate the institution of peonage in many parts of Mexico. What is sometimes called the "peon country" (the group of States just mentioned) appears to be precisely where these little villages of feudal tenants are most common, and one of the most interesting secondary effects of the tide of emigration starting northward from this section to the United States is its probable influence in breaking up the patriarchal organization of agriculture and landholding in Mexico.

Peonage is a debt relation between the employee or tenant and his employer, in which the former is to serve the latter until the debt is extinguished, receiving in the meantime subsistence and certain customary perquisites. The debt is seldom paid in full, because, as a rule, neither party seriously desires it to be paid. If the employee discovered that his account with his employer was about even, he would, in many instances, make this an excuse for obtaining a liberal cash loan from his "patron" to celebrate the next "fiesta," and the "patron" would probably encourage this extravagance on the part of the employee. In Mexico peonage rests solely upon custom and has no specific legal sanction.

The mines of central Mexico were originally worked by slaves or by peons, but for a long time free Mexican labor has been used. Until recently this labor has received a very low wage, rendered still lower in many cases by dependence upon a company store for supplies. It may be doubted whether the wage-earning mine workers of some interior camps have been really more independent, until recently, than the professed peons on the large estates. Like the estates, the central Mexico mining camps have contributed a considerable quota to the emigration northward.

METHOD OF MIGRATION.

In Mexico railways have given the opportunity and the inducement to emigration. Needing unskilled labor for their construction and maintenance, they drew upon the agricultural population along their lines, at first for a few days or weeks of temporary service between crops and later for more extended periods. At first the true peon was extremely averse to leaving his home, and would not work where he could not sleep under his own roof, but gradually he became bolder and more worldly-wise and could be prevailed upon to work for a month or so a hundred miles or more up and down the line. He became accustomed to having silver in his pocket occasionally and found it would exchange for things he had not heretofore thought of having for his personal use. He became attached to cash wages in about the same degree that he became detached from his home surroundings. Employers in the more primitive parts of Mexico say that at present the people will not work for money so long as they have food in their cabins. When they first leave home they will work only long enough to provide themselves with food and shelter for a few days in advance. But the railways, bringing a greater variety of wares at lower prices, have made possible the attractive shop of the railway town, and this market for money has made the latter a more desirable commodity in the eyes of the peon. He has become more of a spender and so a more persistent earner. Even at desert sidings, with

nothing but an adobe hut in sight, laborers come aboard the train in numbers to buy candy and other trifles from the train peddler. The railways thus have attracted labor and have held it more and more permanently from a constantly widening area along their lines.

The railroads that enter Mexico from the United States run for several hundred miles from the border through a desert and very sparsely settled country, but all of them ultimately tap more populous and fertile regions. Along the northern portion of their routes resident labor is so scarce that workers are brought from the south as section hands and for new construction. This has carried the central Mexican villager a thousand miles from his home and to within a few miles of the border, and American employers, with a gold wage, have had little difficulty in attracting him across that not very formidable dividing line. A general officer of the National Railroad of Mexico stated that his company had brought north about 1,500 laborers to work on the upper section of the road within a year, and that practically all of them had ultimately crossed over into Texas. In September, 1907, 400 were employed in a single gang, principally at ballasting. In October 290 of these were dismissed and, because only 30 applied for their (free) return transportation south, their foreman assumed the others had crossed the border. Wages north of the Rio Grande, in Texas, are \$1 to \$1.25 gold, as compared with the same rate in silver south of the river. And it must be borne in mind that prices, except for labor, are no lower in this part of Mexico than in the United States.

Officials of the Mexican Central Railway stated that their laborers in the vicinity of the city of Chihuahua, brought from Aguas Calientes and farther south, were constantly leaving them for the United States, so that a considerable part of their force was really labor in transit. Wages here were as high as \$1.50 and \$1.75 (for extra gangs) in silver; but north of this section of the border the gold wages are higher than in southeastern Texas.

Mines were worked in northern Mexico before railways entered the country, but the development has been so marked since that event as to cause an entire transformation of the industry. Like the railways, the mines have had to import labor from the south; and they also have as steadily lost labor to the United States. The representative of one group of mining properties in the State of Chihuahua said that within a year he had brought to that vicinity approximately 8,000 mine laborers from Zacatecas and the older mining districts of central Mexico, and that not far from 80 per cent of these had left, a part going to New Mexico and the remainder to Arizona.

Thus there is a constant movement of labor northward inside of Mexico itself to supply the growing demands of the less-developed

States, and this supply is ultimately absorbed by the still more exigent demand—as expressed in wage rates—of the border States and Territories of the United States. Besides this, there is doubtless some recruiting, direct or indirect, by the representatives of American employment agencies. Men are met in Mexico who assert that they have either been engaged or have been approached with a view to engagement in this business. The contract labor and immigration laws of the United States are designed to apply to seaports and to oversea immigrants, therefore their provisions are not difficult to evade, because they are so inapplicable to conditions on the Mexican border. Still, a large part of this immigration is not stimulated, except by general economic conditions.

A number of the immigrants probably come with their own money, or with the assistance of friends or relatives already working in the United States. The migration of cotton pickers into Texas and into Oklahoma is almost entirely of this character at present, though a few years ago “bunches” of labor are said to have been recruited openly in Mexico for Texas plantations. And the tendency is for labor to come across more freely and spontaneously with increasing experience of the advantages afforded in the United States. Employment agents receive the newcomers at the boundary line, greeting them with usually bona fide offers of work at fair wages.

Recruited laborers, whether destined for northern Mexico or for the United States, travel in parties, under a boss or “cabo,” who holds the tickets. One is told of locked car doors and armed guards on the platforms of trains to prevent desertions en route; but if these things ever occur, they were not observed in traveling along these lines. Desertions take place, however, and the problem of the recruiter is to deliver a sufficient number of laborers to make a plausible show for his fee—for he seldom delivers all he starts out with. This is not due to the fact that the work he offers is less attractive or well paid, but partly because the peon, in spite of his apparent simple-mindedness, had already selected a different destination when he joined the party, and traveled with it only so far as the free transportation suited his convenience.

After he reaches the United States the Mexican is said to observe contracts better than itinerant white labor. An employment agent in Colorado said: “Roving Mexicans are better than roving white men. They will go to a job, if they agree to, and work, though they may not stay long.” Another agent said he usually lost but 2 or 3 per cent of a gang of Mexicans sent to a job while en route, but that ten times that proportion of white men, doing the same kind of work, would desert, after receiving their transportation either the whole distance or to some intermediate point. Mexicans will leave a job after working a few days, and are constantly lured away from the

railways by farmers and ranchers. In 1907 30 per cent of those in southern Kansas are said to have deserted to work in the wheat fields. Whole gangs at a time leave the Texas sections to pick cotton. One contractor said he lost an entire gang, after paying \$12.50 railway fare a head, before they reached the job to which they had been sent. A railway official in Dallas, though expressing satisfaction with Mexican track labor, said that 50 per cent left the road to work for the farmers soon after receiving their fare to their job. The Southern Pacific Company loses to the mines a large fraction of its labor each year. In the employment agencies the men's hands are examined, and those that have drill callouses, indicating that they have worked in mines in Mexico, are rejected for railway jobs, because they are the most likely to desert. The motive for leaving railway work is the higher wages paid in other occupations.

Most immigrants passing through El Paso reported that they had paid their own fare directly from some town named in one of the interior States, with money obtained by a "sacrifice"—such as the sale of a yoke of steers, a pair of burros, a crop of corn—or by loans from a "patron" or a relative. Several boys, who reported their ages as between 17 and 20 years, said they had been given money by their father to come to the United States to work, and that their father had obtained the money from his "patron" or by the sale of some small property. Many of these statements are doubtless true in substance, while others are manufactured for the occasion. Recruited laborers who are given transportation are probably supplied with personal information to be used at the frontier.

Interest was aroused by the number of immigrants who reported that they had paid their railway fare with money loaned them by a "patron." The name of the "patron" was often given, and he was sometimes a political officer—in one case a judge—and sometimes a merchant, possibly also a landowner. Strictly the word "patron" might be expected to mean an employer, and especially the employer to whom the immigrant had rendered traditional service as a peon. But this class of employers is so unanimously hostile to the emigration of labor that it is extremely unlikely that any one of them would assist this movement, even though he received a high rate of interest on his money. The immigrants claimed to be paying from 5 to 12 per cent for loans running probably six months. In the districts of Mexico from which this labor comes every one from whom information was sought, without exception, scouted the idea that a bona fide employer could be induced by any means within reach of his workmen to assist them to emigrate, even for temporary employment abroad. The common opinion there was that these so-called "patrons" were secretly representing employing interests either in northern Mexico or the United States, and that they were possibly

collecting railway fare from the employer on one hand and from the laborer on the other, charging the latter in addition with interest. Whether or not this is ever done, the story told by the immigrant on the border, of aid received from his "patron" to enable him to leave the country, is nowhere credited by well-informed residents of the interior.

Tickets from points in Jalisco and in Guanajuato to El Paso cost the emigrants from \$20 to \$25 in Mexican currency, or one-half that amount in American money. Laborers appear usually to provide themselves with from \$30 to \$50 (Mexican) for a trip to the United States. A good riding horse or a few pigs sell for the former sum, so it is not beyond the reach of most industrious peasants. Nearly all the immigrants who had left families behind them explained that they had given their wives a few dollars for subsistence during their absence.

Mexicans residing on the American side of the boundary line said that even where there is easy railway communication a laborer and his family will often travel 300 miles on foot to reach the border. This was near El Paso. During a good cotton season in Texas laborers often come on foot and go back in carriages which they have purchased with their season's earnings. Though the Mexican of the Indian type is not ambitious, when he once gets a definite object in view he appears to be very persistent in following it up. A youngish boy passing through the El Paso station stated, and as proof showed his calloused hands, that he had worked in a quarry in Mexico for two years. His wages had been \$6 Mexican (\$3 United States currency) a month and rations, and it had taken him the full two years to save money enough to get to the frontier. He wanted to come to the United States, because during one week he could earn more there than during a month in Mexico.

Immigration, especially through El Paso, was larger than usual during the season of 1907, partly because a drought had followed upon the unfavorably wet year of 1906. Crops were short, provisions expensive, and work not so abundant as usual in exclusively agricultural sections. This made it easier for the "enganchadores" (recruiters, or, more literally, pressmen) to secure workers for mines and for other large enterprises, and also stimulated voluntary emigration.

The Mexican laborer usually migrates for short periods. When the rains begin, usually about May, he must be at home to plant his crop. After that he is willing to work during the growing period, leaving his family to attend to irrigation and weeding; but he must be at home for the harvest. From that time until the fiestas ending with the December holidays are over, the labor market in Mexico is tight; from January to May the workman is willing to go anywhere pro-

vided it is not too cold. This seasonal variation in the labor supply accounts in part for the comparatively short periods for which immigrants come to the United States. Many of those passing through El Paso have made the trip from central Mexico to Arizona or to Kansas City for a second or third time, but after a number of such trips the home tie loosens, and it is not unusual for the family ultimately to accompany the husband, thus taking the next step toward a permanent removal, either across the border or to its vicinity.

Along the Mexican Central Railway the migrating months are said by the railway officials to be February, March, and April; also August and September.

DISTRIBUTING CENTERS.

Probably more Mexican laborers enter the United States through El Paso than cross the border either east or west of that city. During August, 1907, there were admitted at this point 5,802 laborers, and during September of the same year 5,765. From January to the end of September about 26,000 were admitted. The reasons that make El Paso the most important distributing point for Mexican immigration are its direct railway communication with the swarming States of Mexico; the presence across the border, in the State of Chihuahua, of large mines and smelters, which, in supplying their own needs, assist the southern laborer to the frontier; and the direct railway communication that the city enjoys with such chief labor-absorbing areas of the United States as the prairie grain and cotton region, the Colorado and the Territorial mining fields, and California. Three great railway systems that diverge from El Paso use Mexican unskilled labor largely, and in some cases almost exclusively, over a principal part of their route; and railways are the great labor feeders to other industries.

West of El Paso there is considerable diffusion of mining labor across the border both from northern Chihuahua and Sonora; and some labor enters from the west coast of Mexico, by the Guaymas line, through Nogales. After the Southern Pacific Company's extension is completed and a west coast connection made with Guadalajara, the capital of the populous State of Jalisco, and the second city in size of the Republic, it is probable that a much larger movement of labor will occur across this part of the boundary line.

Immigrants crossing the Rio Grande east of El Paso usually find employment in Texas, either upon railways or ranches or as farm laborers. Some of this immigration passes north into Oklahoma during cotton-picking time, and it works southeastward into Louisiana, where Mexicans are being introduced on cane plantations. Much of this labor reaches the frontier at Eagle Pass, at Laredo, and at

Brownsville. Near the latter town, in the early autumn of 1907, sixty boats were said to be employed ferrying Mexicans across to the United States. But the immigration to Texas is not confined to railway points to the same extent as farther west, partly because the neighboring sections of Mexico are a trifle less desert and partly because of the long-established intercourse all along the border, antedating the railways and even American possession of the country.

Of the border cities mentioned El Paso is the only one that is a real labor depot. San Antonio is probably the most important distributing point of Mexican labor for Texas proper. Kansas City, Mo., is given as their destination by many arrivals at El Paso, and that city is resorted to by them as an employment center. Los Angeles serves the same purpose for Southern California, and has a large colony from Old Mexico. Tucson, Ariz., and Trinidad and Denver, Colo., have agents that handle a fairly large number of Mexican laborers.

METHOD OF DISTRIBUTION.

The immigrants arrive at the border practically without funds, but with the moral certainty of securing immediate employment. Here they are met by the representatives of large authorized labor contracting companies, who regularly supply an entire railway system, or many of its divisions, with all the labor needed, and by private agents looking for smaller bodies of men for some special section, or simply speculating in labor; that is, holding it at their headquarters on subsistence until they can secure a good commission by delivering it to some enterprise badly in need of workers. These speculating agents are said to mislead men with promises of work at high wages which they are unable to provide, in order to keep them away from competing agencies.

The large labor contractors combine with this business that of supplying provisions, clothing, and other commissary articles to the workers during their term of employment. Indeed, this is their main source of revenue, and some firms are said to furnish labor to railways without commission in return for the privilege of keeping the commissary. The workingman buys at the commissary because he can get credit there, which is not given by other merchants; and the commissary can grant this credit, because its arrangement with the employing corporations gives it the exclusive right to charge such debts against the pay roll. Laborers who pay cash are generally free to patronize other stores. Although commissary debts are thus secured to some extent, prices are high, the reason given for this being that losses from bad debts are very heavy.

After the immigrant has been given a job he receives transportation to his place of work from the labor agent. This transportation

is furnished free by the railways to men employed by themselves and at reduced party rates to other employers. Besides this the agent has to provide subsistence to destination, an amount varying from less than a dollar to \$3 or \$4 in case of long journeys. This subsistence and paid railway fares are charged to the laborer's account and repaid by him from wages. The distance that a laborer may be sent varies from a few miles to 2,000 miles. One of the larger firms had sent Mexican laborers to different railroads, during eight months of 1907, as follows: To the Chicago, Rock Island and Pacific Railway, 3,523; to the El Paso and Southwestern System, 1,593; to the Fort Worth and Denver City Railway, 973; and to the Pecos Valley and Northeastern Railway, 421.

Along the Texas border, and even in the larger labor centers, are men who secure laborers in small numbers for cotton and beet planters and other minor employers. Some of these recruiters are themselves hardly above the laboring class, and several are Mexicans or Spanish-speaking Americans. It is not unusual for a group of planters in northwestern Texas or Oklahoma, or a beet sugar company in Colorado, to send a manager or foreman to the Rio Grande to gather up a party of 100 or more men and their families, and some parties are taken even as far east as the Mississippi. But as a rule farmers and planters prefer to get laborers by offering higher wages than the railroads, thus drawing men from the sections and saving for themselves railway fare and the other expenses of recruiting.

In Mexico itself the "enganchadores" work principally among the city and tramp labor population, partly because in many country districts hostile sentiment and legislation make open recruiting dangerous. The "enganchados," as these recruited laborers are called, are not considered good workers by Mexican employers, and have the reputation of being mostly broken-down city workmen and loafers. Possibly they do not emigrate. American labor agents seem to think that men specially recruited from Mexico are better than those picked up by chance along the border. Possibly the recruiting for the American labor market is largely secret, and therefore conducted with more success in country districts and among a more reliable class of workmen than the labor drummed up openly for local enterprises.

The progress of the laborer from his home in interior Mexico to his place of work in the United States is therefore in two main stages; first, as a recruit he is taken, or as a free immigrant he works his way, to the border. At this point he falls into the hands of the labor agent, who passes him along to his final destination. The first stage of the journey may or may not be paid for by the laborer himself; the second is in practically all cases at the expense of the employer.

OCCUPATIONS IN WHICH MEXICANS ARE EMPLOYED.

RAILWAY LABORERS.

With the possible exception of agriculture at certain seasons, more Mexicans are employed in the United States as railway laborers than at any other occupation. It is from this occupation that they drift into other lines of work.

Mexicans are distributed as railway laborers over practically all of Texas, New Mexico, and Arizona. They are the main labor employed on the railroads of California as far north as Fresno, in southern Nevada, and in Colorado, and on some Colorado lines into Wyoming; also, they are working in increasing numbers along the Chicago, Rock Island and Pacific Railway, and the Atchison, Topeka and Santa Fe Railway through Kansas, Missouri, and even into Chicago and to central Iowa.

In Mexico native labor now does practically everything on a railroad except operate fast trains, superintend construction and administration, and do more responsible shopwork. In the United States this labor is confined to track maintenance—usually under American or European foremen—and construction, and employment as extra and yard gangs. There are many Mexican section bosses scattered throughout the Southwest, and their number is likely to increase.

The reasons for the growing use of Mexican labor in these occupations are that it is cheap and docile; but these qualities alone would not give it favor were it not also fairly efficient. Employers and foremen do not differentiate the various motives that induce them to prefer a certain kind of labor, but they are usually perfectly clear as to the order of choice among different nationalities.

A trackmaster who had worked various kinds of labor in southern Kansas said: "Mexicans are better than Greeks or Italians, and next to the American 'hobo.' They must be well fed, and want fresh beef and mutton, but don't eat so much pork. They don't have feuds and disorders like the Italians, who are always fighting unless the whole gang is from the same town in Italy. We send a man every spring to the Rio Grande to get our men for the summer. We have to keep our engagements with them, or we can't get any men the next year. Though they are used to low pay at home, they want as much as anybody when they get to this country." A Texas railway official said: "We have worked Mexicans out of El Paso for several years, and since 1903 have substituted them for Italians—who were disorderly—and for Negroes in northern Texas, nearly to Texarkana. They suit us better than any other immigrant labor we can get. They are better than Negroes at ballasting, laying ties, and ordinary track work; but the Negroes can beat them laying rails, and will work better long hours or at rush jobs, as in case of washouts or getting a track around

a wreck. Our chief difficulties are due to ignorance of the language, and to the rough ways of our foremen—who sometimes frighten the Mexicans so they won't work. Mexicans are not very regular, and we have to carry about 50 men on a pay roll to be sure of 30 to 35 men working every day."

A large labor contractor, who is also an employer, said: "I have not found Mexican laborers irregular on section work. They often average about twenty-five days a month. Some stay on the same section seven or eight years. Much depends on the foreman. I can tell the character of a section boss by the number of new men he wants. Some never need new men, because their old hands stay with them, and if any leave, others come from neighboring sections. I know good Mexican section foremen."

A road master in southern California said the Mexicans had been employed in his division four or five years and were displacing other labor. He preferred them to other laborers obtainable, especially to the Japanese. "When you have occasion to discharge one Japanese all would quit, and so you are left without men. But if a Mexican proves a poor or undesirable workman, you can let him go without breaking up the whole gang."

A railway contractor in Los Angeles expressed the same preference for the Mexican as compared with the Japanese, and said the latter could not be trusted to carry out a job just as directed, but that the Mexican was careful to do exactly as he was told. There was not a single instance in which men in actual touch with railroad labor did not give the Mexican the preference over either Japanese or Greek; but one manager stated that he would prefer Japanese, because they were more intelligent.

An objection to the Greeks, as stated by one contractor, was that they would submit to graft. On one system where Greeks were employed section bosses made them pay a dollar a month for their jobs, and shared the labor agents' fees when new men were brought on. The result was that the foremen, practically in the pay of their own workmen, lost authority over them, and the latter soldiered and neglected their work. Mexicans, it is said, will not submit to exactions of this kind, and this is a chief cause why they have lately been given a preference on the road in question.

No instances were discovered where the wages of section hands were less than \$1 a day in 1907, although in previous years men may have worked for 75 and 80 cents in some places near the frontier. Shop laborers at Laredo, Tex., received 75 cents in 1906 and \$1 in 1907. In addition to day wages, the men are given the use of huts or bunk cars. A short distance north from the border the rate of pay rises to \$1.25 a day, and this is generally the wage along the Atchison, Topeka and Santa Fe Railway and the Chicago, Rock Island and

Pacific Railway north of Texas. They received \$1.40 and \$1.50 a day in Kansas. In northern Texas section hands were paid \$1.15 in 1907, and were paid \$1 previously. In northern Arizona the rate had risen from \$1 to \$1.25 within a year or eighteen months. On the line of the Southern Pacific Company, near Bakersfield, Cal., the following rates were said to be in force for ordinary section hands: Greeks, \$1.60; Japanese, \$1.45, and Mexicans, \$1.25 a day. Foremen said that the Mexicans did as much work as men of either of the other nationalities, and that the discrimination in wages was due to arbitrary orders issued from headquarters by men who had no practical knowledge of the efficiency of different kinds of laborers.

Extra gangs are paid higher wages, partly because it is often necessary for them to board in camps, instead of receiving rations, which makes their cost of living higher. Mexicans of this class were paid as high as \$1.75 a day on the Fort Worth and Denver City Railway, in Texas, during the cotton-picking season of 1907. This high wage was partly to keep them away from the farmers. However, \$1.50 is not an unusual wage for Mexican extra men. Upon one railway in central and eastern Texas section hands were paid, in the summer of 1907, \$1 and board, or \$1.50 when they boarded themselves. This matter of board is not always left to the choice of the laborer. If he lives in a section house or hut at a station or section headquarters and is permanently located on one section, he usually has an opportunity to board himself; but if his work requires him to shift from section to section, and he lives in bunk cars, he is usually boarded. The character of the board depends upon local conditions, but testimony was general to the effect that railroads fed their men better than the men fed themselves. The houses provided for section men are very primitive in most cases, frequently being single-room adobe huts or cabins built of condemned ties set vertically with a roof of boards covered with earth, and a clay floor. Often there are no glass windows. These houses are as good as the laborer occupied in Mexico and seem to be adapted to his mode of living.

As he goes northward the section hand encounters a more severe climate, but, to compensate for this, higher wages and better housing. In Oklahoma, during the summer of 1907, scattering Mexicans were employed at \$1.50 a day, or the same wages paid Europeans. A gang of Mexicans worked near Fredonia, Iowa, until January 20, 1907, without apparent suffering. This was attributed to good food and warm houses.

In order to hold labor at lower wages the railroads give Mexicans return transportation to El Paso, if they have worked regularly three months. This applies to all railroads entering El Paso itself, but probably not to smaller lines and those distant from the frontier.

One line gives return passes only in the fall, so that a laborer beginning in February must work six months, one beginning in August but three months, to receive this benefit.

In Mexico wages are nominally about the same as immediately north of the border, but, being paid in silver, have only one-half the purchasing power of those in the United States. The National Railroad of Mexico pays section hands south of Saltillo \$1, and north of that city to Laredo \$1 and \$1.25, which is double the rate paid two years ago. The Mexican Central Railway, in the neighborhood of the city of Chihuahua, pays section men \$1.50 a day and track layers \$1.75. The present exchange and purchasing power of these wages make them equivalent to from 50 to 87½ cents in United States currency. At Ciudad Juarez, across the river from El Paso, the Mexican Central Railway pays laborers \$2 a day, equivalent to \$1 in United States currency, and about the same real wage as was paid until the present year on many American railroads in the Southwest.

Mexican railway laborers live on very little when they draw rations, but demand a liberal diet (usually including fresh meat) when boarded. Board costs about 50 cents a day. One road charges \$3.75 weekly, but its representative said that a Mexican ate on an average from 1 pound to 1½ pounds of fresh meat daily. Contractors and foremen find the efficiency of Mexican laborers so much greater when boarded that it pays to give them regular meals instead of rations, even though higher wages must be paid to compensate them for the increased cost of living.

Regulations as to rations limit the amount a man may draw to his wage credit. On one railway, when hands were paid \$1 a day, they were allowed to draw 65 cents' worth of supplies for every day worked. Now that wages are \$1.15 each man may draw to the value of 75 cents. This ration allowance is not sufficient for Mexicans accompanied by large families, therefore laborers have recently been divided into parties, each under a headman, or "cabo," who draws supplies equal to the aggregate ration credits of his party. The Mexicans then adjust among themselves the distribution, those having families buying the excess of the single men. The division is said to be made without disputes among the members of the different messes.

As a body, the railway laborers who have come from Mexico seem to be fairly well treated. The editor of a Spanish daily in the City of Mexico said that he had received letters from railroad hands in Texas saying they were ill treated, but that the contents of the letters, which had been lost or destroyed, did not impress him seriously. There were some complaints in Colorado and in New Mexico of petty grafting by minor railway officials. The laborers say that pay clerks take part of the pay due them from their envelopes, claiming the

shortages are caused by fines or deductions, when this is not so. An attorney for some of these men had correspondence showing that these charges were not unfounded. The companies try to suppress such dishonesty, because labor is scarce and Mexicans will leave work when they have grievances of this kind, and will prevent other laborers of their nationality from taking their places by reporting these wrongs. Few complaints were heard of ill treatment by brutal bosses. It seems likely that the Mexican's attitude of passive obedience antagonizes foremen less than the more aggressive attitude of Europeans and Orientals. Mexican foremen are employed in some places and are said to be satisfactory. The best evidence that the condition of this kind of labor is not very bad is that the immigrants return repeatedly to the same work, often in the same locality, after going home for a crop season or to see their families.

A hardship of which Mexicans and white laborers alike complain is the difficulty of getting their pay if they leave a job between pay days. The rules of most large employing concerns require the workman to come for his balance the next pay day, which may be nearly a month off. On the railroads men are usually paid, in such cases, if they come personally to division headquarters and properly identify themselves. Mexicans are often so ignorant of these formalities that they will walk a hundred miles or more to headquarters only to find that they have neglected some such requirement, and are therefore unable to get their money.

In Mexico natives are employed in many semiskilled occupations of the railway service at about the same wage as common laborers receive. Pullman car cleaners at Monterey are paid \$1.50 (silver) a day. They work under a Mexican foreman and were reported by the American local manager as very reliable employees. At Aguas Calientes Mexican laborers and machinists or machinists' helpers are employed in the head shops of the Mexican Central Railway, laborers getting 50 cents (silver) a day and machinists' helpers and machinists from \$2 to \$5 (silver). American machinists, of whom there are a number employed, are usually paid monthly salaries, said to average \$125 in American currency. This would make their daily pay about double that of the better-paid Mexicans. White employees said that their Mexican helpers were slow and not very efficient, it requiring two or three of them to do the work of an ordinary machinist's helper in the United States. They were said to lack ambition, to be irregular in shop attendance, and to drink hard after pay days, thus losing part of their time. The lack of ambition may be partly accounted for by the fact that they are kept subordinate to American and European workers by a line drawn in accordance with nationality rather than competency.

At the shops of the National Railroad of Mexico, in Laredo, common labor is paid \$1 (gold) a day. Until last year, when there was a strike, they were paid 75 cents a day. The present wage of these laborers is about four times that paid in similar occupations in central Mexico.

FARM LABORERS.

The Mexican immigrant has been in most cases an agricultural laborer in his own country, and, though his experience at home has given him little familiarity with American farming methods, it is to this occupation in the United States that he turns most readily when the opportunity offers. Cotton and corn, the staple crops of the States where Mexicans are most numerous in this country, are both cultivated extensively in Mexico. Stock raising is a great industry on both sides of the boundary line. In this industry the Mexicans, many of whom were born north of the border, have excelled for a long period. They are now found as shepherds, cowboys, and "broncho busters" as far north as Wyoming. But the main importance of Mexican labor in agriculture is during the harvest season in the cotton fields. Cotton picking suits the Mexican for several reasons: It requires nimble fingers rather than physical strength, in which he can not compete with the white man or the Negro; it employs his whole family; he can follow it from place to place, living out of doors, which seems to suit the half-subdued nomadic instinct of a part of the Mexican race; it is a seasonal occupation, fitting in conveniently with the demands of labor and leisure in his own country, and it is well paid, and paid by the piece.

In Texas and in Oklahoma cotton is raised by prairie farming methods, with more extensive use of machinery than farther east, where soil and climate, and the cotton itself, are different. In these two States a white farmer can raise more cotton than several families can pick in proper season, in the same way that the Kansas farmers can raise more wheat in normal years than the resident labor of the State can harvest. So the man with 40 or 80 acres of cotton opening secures two or three families of Mexicans that migrate from the southward at this season, camp in an outhouse or in their canvas-topped carts, and pick the fields clean, then move on northward to where the crop is just maturing.

Pickers are paid from 50 cents to \$1 a hundred pounds in the seed. Two or three hundred pounds is a fair day's work, though under favorable conditions 400 pounds are sometimes gathered. Children often pick as much as adults, so that a man with a family can earn \$5 or more a day during the height of the season.

In Texas Mexicans are employed throughout the year on onion and vegetable farms and as tenants or hired cultivators on cotton and rice plantations. Their home experience makes them very good

irrigators. For the cultivation of onions they are paid by the hundred. Wages on farms in southeastern Texas are about \$15 a month, the Mexican receiving shelter, but boarding himself. Wages, except during the very busy seasons, are about 60 cents a day. Mexicans are good grubbers, and are about the only laborers employed to clear the south Texas ranches of mesquite brush prior to cultivation. They do this work under contract by the acre, rates varying with the neighborhood and the amount of brush growing on the land. Near the lower Rio Grande ranch hands and shepherds are paid less. A Mexican interviewed had relatives working on a ranch near Laredo for \$8 a month and rations; but this was less than is commonly paid in the vicinity. In the country districts on both sides of the border Mexican money is current, and not many years ago it was not unusual to pay the wages of herders in this coin. Mexican shepherds in Lasalle County, Tex., were paid \$12 (Mexican currency) a month and a ration of coffee, beans, corn meal, salt, and goat meat.

Within two or three years wages have risen rapidly in the part of Texas dependent upon Mexican ranch and farm labor. A farmer in Ward County, near the western border of the State, said that in 1903 Mexican farm hands could still be hired for 50 and 75 cents a day, American currency, but that in 1907 they were paid \$1 and \$1.25 a day, and even higher. White farm labor commands \$1.75 and \$2 a day in the same country.

In Kansas and in northern Oklahoma many Mexicans now leave railway gangs to work in the grain fields during the harvest season. Contractors estimate that nearly one-third leave them for this reason.

In the vicinities of Rocky Ford and Sugar City, Colo., in the valley of the upper Arkansas, sugar beet cultivation has extended rapidly within the past seven years, and there are now six large factories operating in this district. Here immigrants from Old Mexico compete with New Mexicans, Russians, and Japanese in the beet and the melon fields. New Mexican laborers have been employed since 1900, but Old Mexicans have come in more recently. The latter have not displaced other laborers to the same extent as on the railways, but seem to have held their own without difficulty.^(a)

The beet factories own considerable land, which they cultivate either directly or through tenants; but they depend chiefly upon neighboring farmers for their supply of beets. The farmers raise under contract with the factories and their crop is financed partly by the manufacturers. The sugar companies also bring in what labor is needed from outside, assuring men an opportunity to earn 15 cents

^a For convenience the term "Old Mexicans" is used in this article to designate persons of Mexican descent born in Mexico, and "New Mexicans" to designate those of Mexican descent born in the United States, and mainly in New Mexico.

an hour. They advance railway fare from El Paso—about \$9.50 for each adult. Prices for contract work are the same for all nationalities, but Indian schoolboys from New Mexico have been brought in to work by the hour and are somewhat cheaper than other workers. However, on account of school duties, they work only in the spring. The contract price for thinning beets is about \$7 an acre, though it may range anywhere from \$6 to \$8. Beets are topped by the ton, the usual rate being 50 cents. A crop runs from 15 to 25 tons per acre. Japanese usually try to secure at least 15 acres to thin and top, but Mexicans will take less. Between the thinning and the topping season many Mexicans work in the melon fields at from 15 to 20 cents an hour, or find employment on the railway at \$1.25 to \$1.30 a day. The consensus of opinion among a number of beet growers was that Russians made the best laborers, both for the farmer and for the country, because they were better workers and ultimately bought land and became citizens. There was a less decided disposition to prefer Japanese to Mexicans, but the laborer from Old Mexico was generally preferred to the Spanish-speaking laborer from New Mexico as being both a more regular and a more reliable hand. At some mills Mexicans are preferred to Japanese. An attempt has been made, by building an adobe village, to hold the Mexicans as permanent settlers in the vicinity of the Swink factory.

The chief complaints against the Mexicans are that they are not reliable in observing their contracts and will not work regularly. The first brought into the country, about 1900, were driven out by hostile workingmen and farmers, but this sentiment against them is said to have disappeared. In competition with other and constantly more varied nationalities they are not increasing, or increase but slowly. In 1907 Koreans began to be employed—displacing principally the Japanese—and the temporary immigration of some 600 Indian laborers satisfied a demand that had formerly been filled by Mexicans. But immigrants from Old Mexico are displacing New Mexicans, and they continue to be more numerous than workers of any other nationality. Meantime, they are finding new fields of employment in kindred occupations elsewhere. Recently they have been shipped to some extent to the Greeley, Colo., potato country, where Europeans and Japanese have been the only imported labor employed heretofore.

In the irrigated sections of New Mexico and of Arizona local Spanish-speaking laborers, supplemented by some Mexicans from across the border, are employed in raising vegetables and alfalfa and other forage crops. When an attempt was made recently to establish sugar beet cultivation in the Salt River valley, Arizona, Japanese were brought in to raise this crop; but the enterprise failed, and the Japanese have left, not competing with Mexican laborers—who are

paid as high as \$2 a day at certain seasons—in other lines of farming and in ranching.

Mexicans are employed by fruit growers, sugar beet raisers, and general farmers in southern California; but in this State they are not relatively so important a source of rural labor supply as they are in Texas. Nevertheless the more extensive employment of Mexicans by the railroads is likely to result in their being used more by the farmers, who secure hands from railway gangs. Farm wages in southern California are very high, in many places not less than \$2 for good men, and this wage attracts a considerable supply of American labor.

From Texas, Mexicans have been taken east as far as the Mississippi River, and a few gangs of cotton pickers have been tried even in the Yazoo Delta, but with only partial success. The employment of Mexicans on cane plantations, already tried experimentally, may increase, more particularly during the harvest season; but they are not likely to be employed as mill laborers, and so far as could be learned have never been used in beet sugar factories.

The main value of the Mexican in agriculture is as a temporary worker in crops where the season is short, especially in harvesting cotton, grain, and sugar beets. Mexicans are not likely to be employed the year round by small farmers, because they are not entertained in the family like American, German, Scandinavian, or Irish laborers of the North. Yet they do not occupy a position analogous to that of the Negro in the South. They are not permanent, do not acquire land or establish themselves in little cabin homesteads, but remain nomadic and outside of American civilization.

MINE LABORERS.

Mexicans have become in a way the scavengers of the mining industry, picking up the positions left vacant by other classes of workers, and supplanting the least skilled and reliable Europeans and Asiatics. They mine both coal and metal at different places, especially in small mines with shallow workings, and are extensively employed as muckers and surface men. The Mexican is a fairly good man for development work, or for cheap mining undertakings where a poor or a penurious company wishes to "rat hole" a property; that is, work out the ore without scientific development or expert engineering advice. In Old Mexico native miners are employed exclusively in deep and dangerous workings that would try the skill of experienced white labor. Mining is in parts of that country almost a hereditary occupation with a certain class of workers; but miners of this kind either stay at home or else do not form a sufficiently important element in the Spanish-speaking mine popula-

tion of the American border States and Territories to raise the general character of this labor.

In the copper and silver mines of New Mexico and of Arizona, American and Cornish miners are employed, with considerable numbers of Italians and Slavs, who are both miners and laborers. The latter two nationalities predominate in the coal mines. American Negroes are sometimes employed as hostlers and mule men, but are rarely miners. In the larger camps, and in small camps connected with important properties, union labor is used. The Mexican supplements all these other kinds of labor. He will be found mining copper and silver—that is, using drill and powder—in some new mine opened in a new district, to the entire exclusion of white labor, yet later, if the property proves valuable, he may be supplanted wholly by skilled American miners. In a district where white labor is chiefly used a few Mexicans will sometimes be found in smaller and less profitable workings. In most border districts large gangs of Mexican surface men, wood choppers, and often muckers are encountered. There are large mining centers—as at Fierro, Silver City, and San Antonio, N. Mex., where coal and iron as well as other metals are mined—that use Mexican labor mainly, stripping and in shafts and drifts. This mingling of Mexican and white labor, without either supplanting the other entirely, comes from an equilibrium of competitive conditions, due to the general scarcity of labor, the extensive development now occurring, and the easy adjustment of the wage of the Mexican to his true worth. The rates paid white miners are standardized by custom and by union regulations and range from \$3 to \$5 a day. Mexicans will accept a rate much lower than this—not exceeding \$2 a day in most places—but they do not do as much work as a white man. Mining men were undecided which got out the ore for the least money. In one mine, where a complete change from Mexican to American miners had been made within twelve months, one of the owners attributed the change to the fact that the new manager was used to working with white men, adding that there was no special economy in changing, and at the same time no appreciable loss. He suggested, however, that a manager working for absentee owners might make a little more out of the Mexicans for himself, especially if he had an interest in the company store. Another mine owner, who was employing Mexicans alone, said that he was influenced by fear of labor difficulties—that his mine was isolated and a white union might tie it up entirely; but that if some of the Mexicans left him or became dissatisfied he could easily replace them.

In the coal mining district around Trinidad, Colo., Mexicans have been employed as strike breakers; but with Mexican labor exclusively the output of the mines was so irregular as to cause serious losses;

therefore, in this field other labor has been substituted almost entirely. The Mexicans make very fair coke pullers, and are employed especially upon extra gangs. They seem to prefer the irregular work and pay they get in these gangs to the monotony of steady employment even at a sure wage.

Within the Mexican labor area of the United States there are four coal-mining districts. The most important is in southern Kansas and Oklahoma, which employs chiefly Italians and Negroes, with no Mexicans except a few surface men employed at an extreme off-shoot—possibly not strictly a part of this field—at Thurber, Tex. The field of next importance and of prime importance for coking and ore reduction is in southern Colorado and northern New Mexico, the largest mines in the Territory having been opened within a year or two. Here Spanish-speaking labor, from both New Mexico and Mexico, is employed to some extent, though Slavs and Italians do most of the actual mining. In a careful analysis of the nationality of the mine workers employed by the Colorado Fuel and Iron Company in 1905, Dr. Walter Morritt, of the sociological department of the company, gives the following figures: North Italians, 1,139; South Italians, 489; Austrians, 851; Americans, 687; Mexicans, 650; Slavs, 355; Negroes, 304; English, 297; Hungarians, 245; Japanese, 105; Germans, 79; Poles, 68; Welsh, 68; Scotch, 58; Greeks, 58; Russians, 51; Montenegrins, 29; Swedes, 27; Irish, 26; French, 15; Finlanders, 12; Roumanians, 7; Arabs, 5; Swiss, 1, making a total of 5,626. The proportion of Mexicans—and the term here is applied to Spanish-speaking workers from both sides of the border—was larger than previously because this class of labor had been used as strike breakers during the strike of 1903-4. Doctor Morritt expresses the following unfavorable opinion of these workers: "The Indian and the Mexican are both utterly unadapted to the work of mining. The Mexican can be depended on for a certain amount of surface work, but he can rarely be persuaded to work underground. He is shiftless and lacks ambition, and only in time of strike, when extra inducements are offered in the way of best rooms in the mines, generous weights, donations of liquor on the part of the pit boss, is any underground work to be gotten out of him at all; and even then he is not to be relied upon after he has a few dollars to his credit with which to buy 'Dago Red,' as the cheap adulterated whisky is called."

But there are exceptions. The superintendent of one of the largest camps of this company said that while he did not employ enough Mexicans underground to affect the output of the mine materially, because they could not be relied upon to turn out the same amount every day, he found places for such as wanted to work. Mexicans averaged seventeen to eighteen days in their rooms, where European

miners averaged twenty-three and twenty-four days. Miners are paid 55 and 60 cents a long ton, mine run, in this district. Six of the best Mexicans earned, upon an average, within a fraction of \$55 each during the month of August, 1907, while the six best Italians and Slavs averaged within a fraction of a dollar of \$107 each during the same month. It is probable that the Europeans had better rooms, but they had no preference in rates and other conditions of employment. One mine superintendent spoke of the Mexican laborer as filling a peculiar place in the mining field, comparing him with the Italian as follows: "An Italian demands a good job and will work every day. You must show him that he can earn a good wage all the time. He wants to be sure that he will have so much at the end of the week. A Mexican is not particular about the kind of a job he gets, and will not work every day. He doesn't care about knowing how much he will earn the next month. He is willing to shift from job to job, and do one thing one day and another the next, while the Italian doesn't like that. So the Mexicans make good reserve labor, for emergencies and odd jobs. They will do a kind of work it is hard to get other labor to do, because they like to change about and don't want much money; that is, they don't care about saving anything." The manager of the coke ovens at this camp said that among the coke pullers three were Italians for one Mexican, but that among the day labor used around the ovens the proportion was about reversed. He thought Mexicans made good pullers, but they were not sure to be on hand when needed.

Most of the Mexican laborers in this district are American born, and though more intelligent, are less steady than laborers from Old Mexico. The faults that are here described would not be chargeable in the same degree to Mexican peasants who had emigrated to the United States and were far enough from home to feel their dependence upon a regular wage. The local Mexican laborers of Colorado and of New Mexico usually own a cabin and a small piece of land within walking distance of the camp, or within a day's journey, and therefore are more independent of regular wages.

The wages at the coke ovens were recently 80 and 90 cents per oven for pulling and loading on railway car. Levelers and chargers were paid 20 cents per hour; washers, 18½ to 20 cents per hour, and laborers 18½ cents per hour. A labor agent sent 14 immigrant Mexicans to the coke ovens near Trinidad, Colo., the day before his office was visited. They were to receive \$1.50 a day and rations.

A third coal mining field is along the Atchison, Topeka and Santa Fe Railway, near Gallup, N. Mex., within a few miles of the Arizona border. Only about 1,000 men are said to be employed in this district, at several mines. A majority are Italians and Slavs, and the prevailing rate is 58 cents a ton, mine run, 5 tons being a good

eight hours' work. Japanese and Negroes have been employed unsuccessfully. A few Mexicans work underground; and the surface men are mostly New Mexicans and Indians. As miners they are not so good as Italians or Slavs, but equal the Japanese and the Greeks. Only a few Mexicans are employed, and they are not thought to be as good as New Mexicans. The latter are not local residents, but come from other parts of the Territory.

Along the Rio Grande, on both sides of the river near Eagle Pass and Laredo, are mines of soft coal and lignite. Only Mexican miners are employed, though other nationalities have been tried. The reasons for this are the poor quality of the coal, the thin veins in some places, the arid country, and the heat and other climatic conditions, all unfavorable to white miners, and the proximity of large coal mining camps in Mexico employing native labor. About 1,000 men are employed by three companies in the vicinity of Laredo, and the number would be increased to 1,500 were labor obtainable. Workings are shallow and reached by inclines. The roof is bad and requires continuous timbering. The ton rate was not learned, but a manager said that miners could earn \$50 gold a month, but that they did not work regularly enough to do this. Near Eagle Pass the coal is better and the vein is worked from a shaft. The vein averages 6 to 8 feet, shooting coal. From 70 to 80 cents (American currency) a ton is paid, and good men can get out 2 tons a day. Labor is not scarce at present, but was before houses were repaired and prices lowered at the commissary. On the Mexican side of the river, in the same field, miners receive \$1.25 (silver) a ton, which is said to be the highest rate paid in Mexico.

The Mexican miner has the reputation of being very careless in mines, both in timbering and in the use of powder, yet the Eagle Pass mines report only one fatal accident, in the mine itself, during eleven years of operation. This accident was due to a Mexican miner who entered a heading marked dangerous (skull and cross bones) by the inspector and tried for gas with an open lamp. He and his partner were both killed. In Mexico several serious mining accidents have been caused in this way, though the management had taken precautions to warn men of their danger. At Eagle Pass several Mexican miners were blown up while dividing a keg of powder which they had emptied out upon the floor of a cabin with an open fire in it. The powder looked lumpy, and one man threw a piece into the fire to see if it was good. Such ignorant carelessness is one reason why American miners are unwilling to work in company with Mexicans.

The wages of metal miners in Arizona were given by one mine owner as \$2.50, which is double the rate paid a few years ago. In the Patagonia mines, which have always employed Mexicans, miners

were said to earn \$2 to \$3 a day. Another mine manager in the same Territory said that when Americans were employed on time wages they were paid \$4 in the drifts and \$4.75 in the shafts. The latter were usually wet. The Mexican employees were either machine men, who earned \$2.50 to \$3 a day, or surface men and laborers in the mine, who were paid \$2 a day. At the Greene Cananea Copper Company mines at Cananea, Mexico, 40 miles south of the Arizona border, the following wages were paid in 1907 according to a statement by the owners: Mexican miners, \$3 a day; founders, in the smelter, \$3 to \$8 a day; common laborers (pick and shovel men), \$2.50, and superior laborers, \$3 a day. These wages are in Mexican currency and must be divided by two to give the rate in American money. At Silver City, N. Mex., Mexican miners were said to earn \$2 and \$3 a day. A mine owner in the same part of the Territory said that he was paying Mexicans, who were doing developing work in a copper mine, \$2 a day and rations. He had contracts with New Mexicans to sink a shaft at from \$6 to \$10 a foot, the rate varying with dimensions of the shaft and the character of the rock. The owner supplied powder and intrusted the work entirely to the men, only measuring off their work before advancing money on their contract. However, as compared with these wages, one Arizona mine owner was looking for labor in the vicinity of El Paso to take to Arizona, expecting to pay but \$1.50 a day. Without access to the books of a large number of mines, it would be impossible to estimate with any degree of assurance the average rates paid Mexican miners in these two Territories and the ratio their wages bear to those of white miners. Conditions vary in each mine, according to its remoteness from market, the deepness and danger of the workings, the cost of living, and whether it is worked on a time or contract basis. Furthermore, the actual earnings of Mexicans are affected by the irregularity with which they work.

It is certain that mining labor can not be held for less than \$1.50 a day, which is but 25 cents more than the railroads pay for less strenuous work, and it seems reasonable to assume that the Mexicans employed in mining occupations in the Territories do not earn on an average less than \$2 a day. This is about 50 cents more than they earn at Cananea, Mexico, where wages are probably as high as at any place in the Republic. In the lead silver mines around Chihuahua, where labor is dear for Mexico, surface men and muckers earn \$1.50 to \$2 a day. Mexican machine men receive from \$2 to \$3.50 a day, which is about the upper limit of mine earnings. Men who drill in pairs are paid 25 cents a "cuartilla," which is a trifle over 8 inches. Ten "cuartillas" each is considered a fair day's work. All of these wages and earnings quoted for Chihuahua are in Mexican currency, with a purchasing power about one-half that of American money.

As one goes south wages lessen. In one of the best mines of the Zacatecas district drillers are paid 85 cents each (\$1.70 for the pair) for $1\frac{1}{2}$ meters (59.06 inches), and 1 cent each for every centimeter (0.39 inch) above that. Miners who work regularly at this rate earn \$1.50 to \$2 a day. Muckers are paid \$1 a day, ore sorters 75 cents, and common surface laborers 60 cents. This means from a maximum of \$1 down to 30 cents a day in American currency. Sixty miles back from the railroad miners are paid but 75 cents (silver) a day. Ore sorting is an occupation of some importance. It is simply concentrating by hand, and is necessary in a country like Mexico, where ore is still brought to the railway on the backs of burros.

Mexican miners who cross the border from the States of Chihuahua and Sonora are considered a distinct class from the "cholos," or common laborers. But this is a trade distinction, since the miners are often quite as dark—that is, quite as much Indians—as the laborers. Managers and mine superintendents in the United States usually rate the Mexican-born miner very low, while mine employers in Mexico often hold a contrary opinion. One American manager said: "Mexicans have no heads and would be very expensive labor if paid anything like the same wage as whites." They are considered careless timbermen, not to be trusted except under white supervision. An English manager in Mexico said they did good timbering under competent supervision, but were very slow. In some Mexican mines near the border American miners are employed to shoot the blasts, because their better judgment in using powder compensates for the very high wages they are paid. A manager who had used Mexicans in Nevada said: "Mexicans will work in a smaller place than an American. They are good sluice box men and strippers, but you can't trust them, either to work honestly or with high grade ore." Ore stealing is very common among miners in Mexico, and there are buyers—sometimes Americans—in the chief mining centers of that country who make a regular business of purchasing high grade ores in small lots without asking where it came from. A mine owner in New Mexico remarked that Mexicans were often remarkably good judges of the quality and value of an ore. A mine owner in Lower California said his Mexicans were quick to learn, and that some would drill 12 feet a day per man in gneiss. It was remarked by other mine owners that miners in remote parts of the country, uninfluenced by modern ideas, worked harder and did more in a day than Mexicans in the vicinity of large camps and those who had been to the United States. Nevertheless, most testimony as to the effect of emigration upon the labor efficiency of Mexicans was the reverse of this.

One reason why Mexican miners are less esteemed in the United States than in Mexico is that, even assuming their efficiency to increase

somewhat with emigration, their wage rises in a still higher ratio. North of the border white miners are everywhere preferred on machines. Many Americans are employed as machine men in the country immediately south of the border, where Mexican labor commands high wages, but in Zacatecas, where the experiment was tried with selected American miners who were expert machine men and otherwise satisfactory employees, it was found considerably more economical to use Mexican machine men at the respective wages there prevailing.

American miners usually will not work in company with Mexican miners. One reason, as stated, is that the Mexicans are careless, use powder with poor judgment, and do not pin a mine well, so that where they are employed there is a considerable element of added risk. Another reason is the hostility of miners' unions to the employment of Mexicans as skilled laborers in mines.

The opposition of the unions to Mexicans is due largely to two causes. They are cheap labor, and though their lower wages may not lessen the labor cost of production, on account of their lower efficiency, they constantly threaten the maintenance of the union wage. Also, the Mexicans have been used as strike breakers.

The use of Mexicans to break strikes and to prevent the introduction of the closed shop in mining districts is described in a typical instance—the Colorado coal strike of 1903–4—by a representative of the employers as follows:

Equally favorable to the operators in Colorado is the presence of the Mexican. In the Eastern States the first effect of a strike is the worst, and its success depends largely upon the suddenness with which men leave. In Colorado it is otherwise. I have pointed out that the Mexican procures his livelihood at the cost of the least exertion. Ordinarily speaking, he can not find employment in the mines so long as more profitable labor is to be had. But in straits the Mexicans are given rooms in the mines. They do not get these at any direct advance in wages, but there are many ways—assignment of the most preferable rooms, liberal weights and measures, and sometimes a free-hand distribution of whisky—whereby the actual wage is increased.

The Mexican thus brought to see that by a few weeks of hard labor in the mines he may earn more than by desultory attention to his goats for many months will regretfully drop the staff and take up the pick until he has perhaps laid up \$100. Then feeling rich he will work no longer. The shock of the strike is greatly lessened and its pressure upon the operators postponed until the latter may in some degree forearm themselves and the strength of the strikers is somewhat exhausted. Thus the native Mexican acts as a buffer to the blows of the strikers. The Mexican himself rarely strikes.

Most of the Mexicans above described were born in the United States. They owned little homesteads, and were not forced to work, and they lived about as far north as Mexicans are employed in numbers and where their wage relatively to that of whites is highest.

In the West and in Mexico the principal industry subsidiary to mining is smelting. Very few Mexicans are employed in the Colorado steel works; but in smelters they have been used at times in that State, and are largely employed nearer the frontier. In Mexico some of the largest plants in the world are run entirely by this labor, under American and European supervision. Those employed around the steel works and smelters in Colorado are chiefly engaged in chopping wood and in hauling fuel. One large smelter had, at the time it was visited, no Mexicans on its pay rolls, though some had been employed occasionally in the past. Most of the work is done by contract, at fixed rates per ton of ore, and neither Mexicans nor Japanese can compete with the physically stronger and more robust Italians and Austrians. Japanese tried unloading ore at this smelter, but they could earn only \$1.25 a day, while Austrians working beside them at the same rate per ton were earning \$1.75 and over daily. An employment agent in Denver said he had recently filled an order from the Union Pacific Railroad Company with 40 men from Mexico who were to be used at shoveling coal. That work is about the same as unloading ore, but it is probable that the Mexicans were contented with much lower earnings than would satisfy Japanese and Europeans. A smelter engineer in Arizona said that in that Territory Mexicans were employed mostly in small smelters, performing all the common labor for a wage averaging about \$2 a day. The large custom smelters employ fewer Mexicans. An eight-hour day is worked, because, though the Mexicans can stand hot work, they can not work long hours in the very hot surroundings of a desert smelter. Another informant mentioned smelters where but three white men were employed—an engineer, an assayer, and a superintendent. At the El Paso smelter, where labor from Mexico is very largely used, men were receiving from \$1.10 to \$1.25 a day.

In Mexico itself native smelter labor was said to be very satisfactory after it was trained. At Zacatecas laborers were paid 5 and 6 "reales," amounting to 62½ and 75 cents in local currency, or half that amount in American money. At a very large American smelter in Aguas Calientes men were being paid 62½ cents (silver) a day, which was an increase of 25 per cent over the rate paid in the spring of 1907. Besides this, in order to encourage regular work, if a laborer lost but one workday in any month he was paid the extraordinary premium of 50 cents (silver) a day for that month. These laborers were observed lined up on pay day. Several received sums that would indicate that they had earned the premium. They were fairly sturdy and well fed, in marked contrast to the peons who came in to market from the neighboring "haciendas." Yet the smelter workers are themselves peasants and usually leave work in July to put in their crops. There is a constant labor shortage, though the manager said his best laborers did not emigrate.

LUMBERING AND WOODWORKING.

The lumber industry is not important in the section of the United States where Mexican labor is common. At Albuquerque, N. Mex., and at Flagstaff and a few other places in northern Arizona, there are sawmills of some size, supplied with timber from mountain camps at a considerable distance. The American Lumber Company, in Albuquerque, has about 1,000 employees, of whom something over one-half are Spanish-speaking, though mostly American born. A few of the latter are employed in the camps, but most of them are laborers and lumber pilers at the mills, where they earn from \$1.25 to \$2 a day. Immigrant Mexicans were to be distinguished from natives, according to the superintendent, only by being slightly slower and duller. They were not considered ideal laborers, but improved and were willing to learn. Young New Mexicans were employed as bench workers and in operating machines in the box factory, where they earned up to \$2.75 a day. They were reported to work regularly and to give satisfaction.

At Flagstaff, where some 500 men are employed in mill and camp, a large majority of the laborers are New Mexicans, and give satisfaction. About 20 immigrant Mexicans were employed as tie cutters, earning \$2 a day. They are also satisfactory. Mexicans were employed as section men on the logging road.

MISCELLANEOUS OCCUPATIONS.

Some Mexican laborers are located in city colonies, having drifted away from the railroads to engage in various occupations requiring little skill. During the clearing-up operations at San Francisco they worked by the side of Italians and Japanese, sometimes in groups, often scattered among workmen of other nationalities, earning the regulation \$2 a day. Contractors in that city spoke of them as less efficient than Italians, but seemed to place them vaguely in the same class. As the demand for unskilled labor lessens they will probably be replaced entirely by Europeans.

In Los Angeles and vicinity Mexicans of California descent and immigrants are employed as builders' helpers and in minor occupations connected with construction. Parties of these laborers were unpacking and passing tile in a large steel office building. Employers say these workers are mainly from Mexico. They carry hods and drive dirt carts. Through the southern counties of Arizona, in the Gadsden Purchase, there has always been a larger Mexican population than in any other parts of the Territory, and here—in such towns as Phoenix and Tucson—the less skilled building trades are largely controlled by workers of this nationality. As at Laredo and at other Mexican-American frontier towns, the better class of these

workers enter trade unions, or form unions separate from their English-speaking colleagues. In these occupations men earn from \$1.50 to \$2 a day. At Monterey, Mexico, similar laborers, employed on a large ice plant, were paid but 75 cents (silver) a day. An American manager in Monterey said Mexicans worked fairly well under foremen of their own nationality, but that as soon as they had finished what they were told to do they folded their arms and stood still until they received further instructions.

In southern California and in Texas Mexicans do most of the excavating and road building, and are otherwise employed on public works. In the former State a contractor said Mexicans could drive a two-mule scraper, but that he would not trust them with a four-mule scraper. They were paid \$2.25 a day. White laborers were preferred, because they received the same wages, except that the four-mule scraper drivers were paid \$2.50 a day. Asphalt and cement workers, except skilled hands, are paid \$1.25 a day in Los Angeles. Mexicans accept lower wages in the city, because they can be with their families. The pay rolls of one contracting firm, engaged largely in street grading and in other public works, showed that Mexican laborers were paid from 22½ to 30 cents an hour in the vicinity of the city. In San Antonio, Tex., street laborers are paid \$1.25 and \$1.50 a day. They are mostly Mexican immigrants or of Mexican descent. A number of Mexicans are employed by the Government upon its irrigation projects in the southwest. They were said to be receiving the same pay as other laborers—that is, from \$2 to \$2.50 for an eight-hour day—but it was evident from talk with the foremen that where uniform wages are paid, as in this instance, other laborers are much preferred.

In the city colonies of Mexican immigrants, especially in families where children have attended public school, evidences begin to appear of a differentiation of employments, and a rise of the more intelligent to a better class of positions. In Los Angeles immigrant Mexicans are working in slaughterhouses and in meat shops. One boy is foreman of a bed spring factory, receiving \$18 a week. A number of girls work in canneries and at packing crackers. One girl is clerk in a 10-cent store that caters to Mexican trade. A few women are said to be employed in clothing factories, though none were actually found in this occupation. At Austin, Tex., a number of Mexican girls work in a candy factory, where they are said to be more regular and to have better morals than white help.

But Mexican women and children do not usually work in factories in the United States. This is partly because husbands and fathers oppose it, having a peasant prejudice to their women leaving home, and it is partly because these women lack the foundations of industrial training. For the same reason Mexicans do not become domestic

servants. Women of the better laboring class will not leave home, and the immigrant women have so little conception of domestic arrangements in the United States that the task of training them would be too heavy for American housewives. The fairly well-trained servants of Mexico do not emigrate. Even in that country the Chinese are often the only competent and trustworthy servants obtainable by American residents.

CHARACTER, AND COMPARISON WITH OTHER NATIONALITIES.

The Mexican laborer is unambitious, listless, physically weak, irregular, and indolent. On the other hand, he is docile, patient, usually orderly in camp, fairly intelligent under competent supervision, obedient, and cheap. If he were active and ambitious, he would be less tractable and would cost more. His strongest point is his willingness to work for a low wage.

Though Mexicans lack ambition, they are alert in certain ways. In the Colorado beet country they are said to be the first to reach a section where higher wages are paid. "Quick to catch on," was the expression used in characterizing them. A California contractor, who had very broad experience with laborers of this nationality, said: "They have more intelligence than you think at first. They learn quickly, so that they can do anything in asphalt work." Other employers, both in Mexico and in the United States, noted similar qualities in their laborers; the usual opinion, however, is that they are dull.

Though careless in some ways about money, the Mexicans are very tenacious of their rights. Many disputes arise between them and the farmers employing them on contract in the beet fields. Their suspicions of the fairness of their employer seem easily aroused, and they will quit a job at once if they think they are being cheated. One employer said the Mexicans were always trying "to do" their boss, but this opinion of them is not common. Many of them drink to excess, and lose time after a spree; but they never attack a man placed over them, and they settle their rows among themselves.

Ordinarily their credit is poor, and commissary managers complain of losing much money through Mexican patrons. One storekeeper, in a Colorado mining camp, tried the experiment of extending to some of the old settled and more reliable Mexicans credit to the amount of \$25 on thirty days' time; but the men slowly fell behind in their accounts and would not pay up, and the experiment was abandoned after six months. This manager said he would trust ten Italians rather than one Mexican. On the other hand, when the payment of a debt depends upon a sentimental obligation,

or something more than everyday commercial honor, it is generally paid. The assistant general manager of one of the Texas railroads said that he had often loaned a dollar or two to Mexican workmen, who chanced to be stranded in the city, and who had at one time been employed by the road, and that they had never, in a single instance, failed to repay him. In one case a sick man, with a family, on his way back to Mexico borrowed \$2, which was given as an act of charity without expectation of its being returned. But a few weeks or months later, when the man was well again and had returned to work, he stepped into an office of the same railroad several hundred miles off, and handed the money to the agent to be forwarded to the lender. Money lenders in Mexico seem to loan money without much security to intending emigrants—though the actual conditions under which these loans are made could not be discovered. But probably in such cases there is some means of exacting payment in case the emigrant ever returns to his home and family.

Mexicans who have families are said generally to be faithful to their marriage relations. Yet this common testimony of employers and foremen and those dealing most with these laborers was directly contradicted by other men in a position to be equally well informed. The devotion of the Mexican laborer to his family while it is with him, and his desire to return to it in Mexico, are everywhere recognized by Americans. The bishop of an American Catholic diocese, himself a Spaniard, said that as a rule the immigrants sent money to their families left in Mexico and ultimately either returned to them or brought them to the United States; but that cases occurred where a man deserted his family in Mexico and took up with some woman of his class in the United States.

Wherever immigrant Mexican laborers are employed in any numbers in the Southwest postmasters reported that they sent money back to Mexico. Usually the postal orders were for small sums, but often they made a respectable total in the aggregate. From Rocky Ford, Colo., some \$300 a month is thus sent. By reason of the fact that the laborers there work but for a season, most of them doubtless hoard their earnings (such as they do not spend currently) and carry them back with them on their return. Near Gallup, N. Mex., mine and railroad laborers send money home through the post-office, and from northern Arizona, as an educated Mexican who acted as correspondent for illiterate laborers expressed it, "very much of what they don't spend" is thus sent home. The postmistress at Flagstaff, Ariz., said that making out postal orders for Mexicans formed a considerable part of the work of the office. Some officials, though remarking that the total sum was small, noted it as a new item or a growing item in their post-office transactions. The post-office seems to be used by Mexicans for money transfers the more

frequently the greater their distance from the border. Those near the frontier, intending to return to Mexico themselves shortly, probably hold their money to carry home in person. A labor agent, dealing with Mexicans on the frontier and speaking Spanish fluently, said that the returning immigrants often had \$200 gold in their possession, which is a fortune for a workingman in central Mexico. The editor of a Spanish paper in El Paso, himself a former Mexican official, said that many Mexicans returned, especially from the mining country, with this sum. They either spend it in ostentatious display among their neighbors when they get home and return to the United States penniless the following season, or else buy land and stock. The few thrifty ones probably accumulate enough after a few trips to the north to place themselves above the harder and poorer paid kinds of labor in Mexico. Two men of this character were met at Zacatecas; one had a stall in the market.

People familiar with both races say the Mexicans are thriftier than the Negroes. Some of the Pueblo Indian laborers in the Southwest are said to be savers, and this may be an incipient trait in the Indian stock of the Mexican peon. But many employers in the Southwest and in Mexico say that whisky, gambling, and fine clothes absorb most of the Mexican's surplus earnings. Love of display is a very common trait among them and leads to some desirable results, such as the improvement of the homes among New Mexicans, and probably also among the immigrants. But their lavish expenditure seems to be due partly to actual lack of foresight, to forgetfulness, when they have money, that they will ever again be without it. For instance, when the beet harvesters return to El Paso from Colorado, in the fall, they usually have plenty of money, yet not over 30 per cent of the laborers—by actual count kept at one mill—will take the trouble to form parties of ten, and thus secure a party railway rate to the frontier, which would save each laborer several dollars. This is not due to ignorance—for in the particular instance mentioned the mill manager took special trouble to inform them that they could save this money—but apparently to a desire to show off by traveling independently.

Thrift is an important element in the efficiency of labor; for where it is present the laborer usually works more regularly, dissipates less, and is constantly urgent for higher wages. On the other hand, the thriftless laborer is a good man for emergencies—a short job pleases him as well as a long one—and he will work cheap. If the thrift of the Mexicans increases with experience in the United States, though there is not much reason to expect this in any immediately observable degree, they will lose some of the peculiar qualities that make them desirable to employers at present, but at the same time acquire others that will add to their value in

a different direction. In the comparisons made by employers and foremen of Mexican with other immigrant labor, the peculiar serviceability of each in a different way was sometimes lost sight of, and the Mexican was judged by the European or Oriental standard or vice versa. This consideration should qualify the following observations:

Different employers in the beet fields, in comparing Mexicans with Japanese, said: "Japanese want better pay, but are quicker and so are as cheap as Mexicans. They get out earlier in the morning." "Our farmers will engage good Mexicans for the following year. They are about equal as workers to Russians and Japanese, but not so intelligent and thrifty. Different nationalities don't work together. Russians and Japanese will observe their contracts better than Mexicans. Mexicans are the best spenders. Russians are desirable savers, because they save to buy farms. The Japanese are bad savers, because they save money to send away." "The Japanese push up wages." (Given as an unfavorable comparison with Mexicans.)

In other employments Mexicans and Japanese were compared as follows: "Old Mexicans are better laborers than Japanese for a large employer because they do not go in gangs, under a head man or agent like the Japanese. [However, in the beet fields they work under "patrones" of their own nationality.] Every Japanese gang is a trade union; they come and quit together. Among the Mexicans one is as good as another, and they will split up and go off singly to different jobs, but don't all quit at once." These observations were repeated in substance by other employers. "Mexicans are cheaper, and in many cases just as good man for man. Japanese now demand at least \$2 a day, about the same as a white man, and they are getting \$2.25 a day at the tunnel." (This was near Trinidad, Colo.) "We prefer to work Mexicans. Mexicans will work with anybody but Japanese. They hate the Japs. We had a mixed gang recently on a stone crusher, when we were very short of labor, the Mexicans feeding and the Japanese in front of the machine. The Mexicans hustled the Japs so hard that they drove them off the job and we had to substitute Mexicans."

Reference has already been made to the fact that for railroad work Mexicans are preferred in many places to Greeks, and even to Italians. The following are memoranda of conversations with employers and foremen familiar with workers of these nationalities: "On railways Mexicans are better than Greeks and Italians, and next to the American 'hobo.'" "New Mexicans are better laborers than Italians or Greeks." "'Cholos' are generally preferred to Greeks or Japanese, and some prefer them to whites." "Railways prefer Mexicans to Japanese and Europeans because they don't combine." "Mexicans are rapidly displacing Greeks and Japanese in railway

work in California." "While the Southern Pacific Railway has Mexicans generally on the sections, near El Paso, where there are some dangerous cuts, it employs Italians." "Mexicans do more work per man [on railways] than Greeks and Italians. They are more willing, and if one is discharged the others will not quit."

A railroad manager has been previously quoted as saying that for emergency work Negroes were better than Mexicans, but that for plodding work the latter were to be preferred. Mexicans are considered better cotton pickers, because they will work the season out, while Negroes stop in the midst of a crop to spend their money. Another employer said: "Negroes are better physically, but less diligent, so Mexicans accomplish as much as they." In southern Texas Mexican labor is everywhere preferred to Negro labor, and is supplanting it upon public works in many places, including some of the larger cities along the Gulf coast and in central Texas. An asphalt contractor in Los Angeles said: "'Cholos' are better workers than Japanese, Chinese, or Negroes."

The comparison with the Indian is generally unfavorable to the Mexican. In the beet country the Indian is considered cheaper and more reliable, if not otherwise better labor. An employer said: "Indian boys from 14 to 20 years old, such as we have had here, will do as much as any laborers, Mexican, Russian, or Japanese." A foreman in Arizona, whose statement could not be verified, said: "The Santa Fe paid Navajo Indians \$2 a day when it was paying 'cholos' \$1.25, because Indians did nearly double the work." At the Gallup (N. Mex.) coal mines it was said: "Navajos are better than Mexican immigrants, and the latter are about as good as the Greeks and Japanese." The Yaqui Indians also are considered good workers. The governor of Arizona said: "The best labor we get from Mexico is the Yaqui Indians. They are more regular and industrious than the other immigrants from that country. They come up here, fraternize with the Mexicans, and then buy arms and go back home to shoot Mexicans." A mine manager in Mexico said: "Mexican labor in Mexico is not as good as Mexican labor in the United States. The best labor we have here (in Sonora) is the Yaqui Indians."

The general relation of Old Mexican to New Mexican or American-born labor of Mexican descent is thus summarized by those familiar with both: "Old Mexicans are increasing (in the Colorado beet fields) relatively to New Mexicans." "From 1900 till 1905 New Mexicans were the chief beet-field workers. Since 1905 Old Mexicans have been supplanting them." "New Mexicans are not employed so much as formerly, because they can get work at home." "When they can make them understand (i. e., speak Spanish or have an interpreter), farmers take Old Mexicans in preference to New Mexicans. The latter are pretty smart and lazy." "The New Mexi-

cans are at the stage where 'a little learning is a dangerous thing.' "I have nothing to do with New Mexicans, because they are too smart for me and too vicious." "Texas Mexicans, whom I sometimes employed for ranch (farm) work in Mexico, were better than the natives, because they were more intelligent and knew how to use tools and implements." "New Mexicans make at least double as good coal miners as Old Mexicans." "Section foremen around here prefer New Mexicans to Old Mexicans, because the latter are so slow to understand." "New Mexicans are better than Old Mexicans for lumber yard work, because they are more intelligent." "New Mexicans are better yard men and lumber pilers than white men."

All of these comparisons are understood to apply only to unskilled or semiskilled labor. In any higher class of employment the European would in all cases be preferred.

HOME LIFE AND STANDARD OF LIVING.

The wants of the Mexican peon are hardly more complex than those of the original Indian from whom he is descended. An adobe hut with an earth floor, or even a shelter of branches against the wind, a few pieces of pottery, a serape or a sheepskin to lie on at night and to keep out the keener blasts by day, a modicum of cotton clothing, sandals, and a cheap straw sombrero are a sufficient domestic equipment. Corn, beans, and chilis are the staples of his coarse and simple diet. Equally cheap pulque or its more potent and dangerous distillation, mescal, supplies the stimulant demanded by the crudeness of his food, and card playing affords the diversion needed to break the monotony of his life.

In New Mexico one can observe a more advanced stage in the transformation from this simple and unprogressive condition than is to be seen as yet in Mexico itself. For the same influences are at work upon the Pueblo-Aztec races in both republics, though they have come a little earlier in the north. Thirty years ago the New Mexican villager had no use for money. There was not even an iron hinge in his hut. His pottery was fashioned by his own hands, as was the rude plow with which he scratched a bit of valley land. Clothing was often woven by the family from the wool of his own flocks. Old settlers remember when jury fees were almost the only money countrymen ever saw.

Then came the railroad, along which circulated dollars, as well as other commodities new to the country. The peasant felt the pressure of novel needs about the time he found a market for his labor. Gradually his standard of living rose. Now, except in remote localities, the adobe hut, to which the American-born Mexican wisely clings, usually contains an iron bed, frequently a good cooking range, and not

unusually other furniture. His windows are glazed, cheap prints adorn the walls, and a white spread sets forth the importance of the bed. These adobe dwellings are usually neat and clean, with an orderliness not always to be found in the homes of immigrant laborers from Europe.

The New Mexican no longer is village shy, averse to leaving the neighborhood where he was born and where he can always find shelter and food among his friends. He makes seasonal migrations to distant parts of the west in search of work, often leaving his family behind him to attend to the crop in his absence. A Las Vegas (N. Mex.) merchant received answers to an advertisement in a local Spanish paper from Texas, Arizona, California, Wyoming, and Colorado, so widely had the resident Mexicans scattered to find employment upon the ranches and the railroads. One little village had 70 men absent, mostly in Utah as sheep herders. As a rule the hamlets in the irrigated bottoms do not afford work for wages, so this migration of the Spanish-speaking people within the United States is a migration for money—not the nomadic restlessness of an old Indian stock, but a definite seeking after better economic conditions—after the means to supply new needs.

Although the women stay at home and do not themselves become earners, they appear to be the spenders, or the ones for whom money is first and chiefly spent. A Mexican laborer will dress his wife and children expensively while he wears rags himself. Social emulation or some kindred sentiment seems to account for the slow but steady improvement in the New Mexican home. In fact, showy furniture frequently stands as a symbol of means rather than of use. A well draped bed will occupy a prominent place in an apartment where the family sleeps on the floor. And these new standards of style and ostensible comfort are set by the women rather than by the men.

The immigrant from Old Mexico is passing along the same road as his brother north of the line, only he is a little behind. He dons American working clothes when he crosses the border; and if he goes into a boarding camp becomes accustomed to a dietary scale far above that to which he was accustomed at home. It is doubtful if the fresh-meat-eating laborer ever returns willingly to a vegetable diet. Some Mexicans in Texas seem to appreciate the United States chiefly as a place where there is more to eat than in Mexico. In migrating to the United States the Mexican loosens the home tie more than does the New Mexican in his migrations; for he goes to a greater distance and to a different country. Therefore he breaks away more completely from the system of communal dependence common to the Spanish-speaking peasantry of both countries, where the lazy man and the man out of work live off their relatives and neighbors, so that the sense of individual economic responsibility is never developed. The com-

munal standard of living is apt to be low, because emulative influences are absent. In the United States, for instance, the standard of living constantly rises, partly because every man wants to excel or at least equal his neighbor in home surroundings. And other things being the same, the standard of living rises most rapidly where there is the most social contact, as in towns and in cities, provided each family unit is upon an independent basis. But where the man who increases his family expenditure, at once, by this evidence of prosperity, becomes the prey of all his poorer relatives and connections, and even neighbors, who swarm in and eat up his surplus substance, obviously there can be little progress, though there is a comfortable condition of equality among all members of the community. This was the condition of the Mexican villagers. Custom made the more industrious and efficient the victims of the lazy and inefficient. There was no incentive to accumulate. Society was reduced to a subsistence basis.

With emigration the communal unit is broken up, and there is an opportunity to accumulate and enjoy the fruit of this accumulation. The conditions under which the Mexican laborer in the United States works usually prevent his having a home; so he does not buy furniture. But he spends liberally for clothing, and if his family accompanies him, provides well for his wife and children. He thus accustoms himself to things he has not heretofore enjoyed, and carries the taste for these things back to Mexico. New demands for American manufactures grow up in Mexico where the returned emigrant has settled, and trade follows in the wake of retreating labor.

It is the general opinion that Mexican immigrants eat better and more varied food in the United States than at home, but their diet in the United States is so different under different conditions that a safe conclusion can not be drawn from observing isolated cases. A person who had lived among Mexicans in Mexico and in Colorado said: "Both immigrants and American-born Mexicans eat chilis and beans and jerk their meat. But in Old Mexico people have a greater variety of food, because it is so easily procured." This applies especially to fruits and to vegetables, which are fairly abundant and varied, though of poor quality, at least in the markets of the larger provincial towns of Mexico. At a Colorado coal mine store a typical bill of a New Mexican was 4 sacks of flour, Mexican beans, canned goods (tomatoes, corn, and peas), a 15-pound bucket of jelly, 20 pounds of lard, chilis, corn meal, and about \$3 worth of fresh boiling beef and bacon. This represents about the best dietary scale of Spanish-speaking laborers, where they board themselves. Some items are omitted or were obtained elsewhere. Compared with this is the following weekly ration of a "family" (a) on a plantation in the extreme southern portion of Mexico, where wages are high for

^aA man, wife, and children too young to work.

the Republic and labor scarce: $1\frac{1}{2}$ kilos (3.3 pounds) beans, 1 kilo (2.2 pounds) rice, 600 grams (1.3 pounds) coffee, $\frac{1}{2}$ kilo (1.1 pounds) salt, 1 kilo (2.2 pounds) brown sugar, 3 kilos (6.6 pounds) meat, one-half bottle lard, one-half bottle kerosene. At Flagstaff, Ariz., a Mexican said that men boarding themselves paid \$4 or \$5 a month for a house, usually occupied by two or more, and bought flour, beans, sugar, and coffee, but no meat and very little of other provisions. At a railway store in California immigrant Mexicans were buying bacon, ham, flour, beans, and some canned goods. Where they are boarded, as remarked elsewhere, they eat a great deal of fresh meat. One contractor said of his Old Mexicans: "They gorge themselves on meat."

A merchant dealing with both New Mexicans and immigrant Mexicans said: "Mexicans born in this country are usually neat about their homes and buy things to make them comfortable. They will own a \$35 bed, though they sleep out of doors in summer. I sell on an average one good kitchen range a month to Mexicans in this community of some 500 people. They have crayon enlargements in their houses. They don't use much table linen; they use oilcloth. They like gaudily colored table covers and pottery ornaments." Old Mexicans buy a cheaper quality of goods and in smaller quantities than New Mexicans; and all Mexicans, though better buyers, use cheaper articles than Italians, and buy them with less discrimination. Italians will pay 40 cents a pound for Edam cheese, and correspondingly higher prices for the best imported olive oil and macaroni, if the articles are really as represented, but Mexicans buy better clothing, especially for their women and children. Young Americans of Mexican descent buy tailor-made clothing, but older New Mexicans and immigrants will seldom pay more than \$10 for a ready-made suit. The wives of Mexican miners and laborers will buy more expensive hats and shoes than American women of a much better position in life. Sewing machines have found their way into Mexican homes throughout the Southwest. The returning immigrant often invests a considerable share of his savings in attire for himself and family before reaching home.

EMIGRATION AND LABOR EFFICIENCY.

The new sense of self-dependence created by migration is said to be both a moral and an industrial stimulus to the Mexican, and does not leave him even when he returns to his own country. Several employers in Mexico expressed, independently of each other, the opinion that the laborer who had been to the United States was a better worker than the one who had never left home. Some thought that the old-time peon, who had never left his village, was more tractable and could be driven more; but that the laborer educated by

travel across the border had more initiative and intelligence, and more need for money, so that his real efficiency was higher, though his habits were more irregular. The testimony of employers who had had an opportunity to observe labor in both countries, was unanimous that Mexicans worked better in the United States than in Mexico; that they learned to direct their work more intelligently, worked more days a month, and worked with more vigor. This was attributed partly to American superintendence, partly to higher wages and better food, and partly to the fact that the Mexican came to the United States with the definite object of saving money to carry back home, and gave his attention to that one thing.

One railway manager qualified his opinion of the influence of emigration upon the labor efficiency of Mexicans as follows: "Their efficiency is not increased by higher wages. They do not do so much as five years ago. But those who have been in the United States are in some respects cheaper, because they need less supervision." Another employer, with more men in his service, summed up the matter by saying of laborers who had come back to Mexico to work, after being in the United States: "We get more service for more wages."

The general educational effect of travel upon the Mexican peons is probably wholesome. They learn to do new kinds of work, under new conditions. They see different ways of living and acquire new wants. They begin to have a vague ambition for social and economic betterment. It is so usual in Mexico to speak of the Indian laborer as absolutely without ambition, that to attribute to him this quality marks a man in common opinion as a theorist. But the very movement of this labor northward is a proof of ambition. These workers are not forced from their homes—they leave against opposition of their old employers, those whom they have been taught to respect and obey. Sometimes they leave against the will of the priest as well as of the "patron;" for there is often solidarity of interest between the two in rural parishes. The attraction that overcomes this opposition is therefore a strong one—and it is none other than the motive that sets the European immigrant upon his way across the sea—to earn more money and to live better. Some educated Mexicans say that the laborers of their country are beginning to be restless under the old caste inferiority, to which they have submitted from before the Conquest; that doctrines of equality, but half comprehended, are awakening new ideas among the peasantry, and that the movement among them to the north is partly a groping for an opportunity to rise out of their hereditary condition. A mere grain of truth may be at the bottom of this opinion, but it is mostly the idealism of educated social optimists, read into the extremely simple and practical mind of the Indian, who aspires mostly for very concrete things. The peon immigrant has an ambition; but it is limited to the few dollars which he

can carry back to his family and often dissipate in gorgeous expenditure. Still, this ambition is better than none at all; and it results in labor, which is discipline, and in saving, which is a still higher and less familiar discipline to these people. Ultimately it brings about a higher standard of living, which is the basis for social aspirations, such as overhopeful Mexicans already feign to discover among their peon classes.

This primary desire for money, even if the money is to be spent unwisely, makes the Mexican a better worker. His efficiency as a laborer is rising slowly to the demands of the gold-paying employer in the United States. As he acquires more varied experience, his initiative and adaptability increase. When it is considered that he is the product of unnumbered generations of training in a single occupation—in the simplest of all labor, primitive and unprogressive agriculture—it is not to be expected that he should respond readily to all the varied demands of modern industry. The important point is that he improves, “catches on,” as the foremen say.

SOCIAL CONDITION OF MEXICANS IN THE UNITED STATES.

The Spanish-speaking population of the United States has not increased rapidly, and in localities where it is brought into close competition with other races appears to be decreasing. But the population of Mexico has more than doubled within one hundred years, without appreciable immigration. The number of inhabitants in the Republic at present probably exceeds 15,000,000. The race has not been as prolific in Mexico as either the white or the black race in the United States. This has probably been due not so much to a lower birth rate as to a higher death rate, caused by poorer sanitary conditions and less nourishing food. Mexicans are fatalists in case of epidemics, exposing themselves to contagion without regard to consequences. They are said to be susceptible to tuberculosis. While they do not impress one as able to resist the stress of modern urban life, they literally swarm in the crowded, insanitary courts of the City of Mexico.

Physicians familiar with Mexican immigrants in the United States usually speak of them as poorly nourished, with less vigor and resistance to disease than Europeans, Negroes, or Americans. A mine physician said: “Mexicans in this country have fairly large families, but the population resident here increases but slowly, if at all, on account of the low resistance powers of the race.” Parasitic anæmia, or the “hook worm,” is not the cause of this, apparently, since the disease is unknown in many parts of Mexico and not common among the immigrants. There are a few cases in coal mines near the border, all popularly supposed to be brought from a single mining district of Mexico, and to be due to the habit of earth-eating said to prevail

in that locality. Speaking of Mexican communities in Colorado, a person familiar with them said: "New Mexicans have large families, but seem to be dying out; and the Mexican population of Pueblo and Trinidad appears to be decreasing, and would decrease more were it not for immigration from the south." There are no statistics to show whether or not this surmise is correct. The American population of these western towns and cities is growing so rapidly, and the country is filling up so fast with European immigrants, that the so-called "Mexican" population, while really growing, may by contrast appear to be lessening; also, the New Mexicans are more widely distributed than formerly, entering new occupations and old occupations in a country that was entirely without settlers a few years ago. Therefore a local decrease might accompany a general increase throughout the State, or in neighboring States. At one place in Colorado an election official said that the poll books showed a decreasing Mexican population. But such evidence has no value for general purposes. In Los Angeles immigrant Mexicans are said to be more robust than natives of Mexican descent, and to be displacing them. The impression of Americans here and in the Territories accords with the opinions given from Colorado, that the American-born Mexicans are a decadent race, yielding before the physically more vigorous immigrants from Europe and the East. One cause given for the decline of the New Mexican population is inbreeding—intermarriage for generations among the few families of a village, said to result in stunting and deformities and in a general decrease of virility.

Los Angeles has probably the largest urban colony of immigrant Mexicans in the United States. The total Spanish-speaking population of the city is said not to be increasing, but natives are being supplanted by immigrants, so that in a district in the old Spanish town, where there are still many hundreds of Mexicans, a social settlement worker knew of but four families that were born in this country. These people live in courts and in alleys, into which open one-story huts having one or two rooms, built of wood or brick and adobe, weatherproof, but ill-lighted, unclean, unwholesome, and hardly to be tolerated by the poorest except in the sunny and warm California climate. Not long ago a physician found 23 Mexicans sleeping in one small room in this district, and another was added to the number before he left. These courts harbor not only Mexicans, but Negroes and Slavs as well. Families of different race and nationality occupy adjoining tenements. There is nothing to distinguish the house of one from the other, except that a box of flowers occasionally is seen in front of the Mexican quarters. Single-room huts rent for \$3 a month, and this rate per room is charged for larger tenements. On account of a recent tenement house ordinance in Los

Angeles the condition of these courts had improved somewhat when they were visited, in the autumn of 1907. Outside water taps and closets—apparently serving an entire court—with sewer connection had been installed.

Austin and San Antonio, Tex., have large colonies of immigrant Mexicans, which are undoubtedly growing rapidly, and not, like that of Los Angeles, about stationary in total population. But housing conditions are better, partly because land values are lower and there is less necessity for crowding.

Los Angeles is a native American city, settled mostly by people from the Eastern States. Of a total public school enrollment of 42,260 but 2,046 are foreign-born. Of these foreign-born children, 938 are natives of Mexico. The last census statistics are already too old to show the relative numbers of Mexicans and other foreigners in the city, but these figures are thought by the school authorities to indicate that the school attendance of Mexicans is relatively as large as that of other nationalities.

The Mexicans of San Antonio show an interest in the public schools and the attendance is rapidly increasing. In fact the authorities find it difficult to provide adequate accommodations in the Mexican quarter of the city. In one district, where seven-eighths of the enrollment is Mexican, within five years an eight-room building has been increased to sixteen rooms and a seven-room building built in a different part of the district. Parents show great interest in the schools and a Mexican merchant presented a bell to one of the buildings at the time of its completion. There is usually a Mexican member—an American-born citizen of Mexican descent—on the school board to represent the Spanish-speaking people of the city. All instruction is in English and the children are taught to salute the flag. American parents send their children to the same schools with Mexican children. The attitude of the people of the city toward Mexican children in the schools was thus explicitly described by an educational officer: "The citizens of San Antonio want the Mexican children to have the same advantages as their own in the public schools for four reasons: (1) From humanitarian considerations they want to raise the Mexican population and give it a better chance in life; (2) from political considerations they want to satisfy the Mexican voters; (3) many business men see a practical advantage in having their children—more especially boys—associate with Mexican children in school and learn their character, because they will have to deal with them in after life; (4) we all want to keep the Mexican population contented, so more Mexican labor will immigrate to this country." In this city the testimony was that Mexican children were well behaved in school, and that they were bright in the primary grades and in the manual training departments, but that they entered later

and left earlier than American children. It was pointed out that the adult Mexican population of Texas and of the Territories had never enjoyed public school advantages, and so the present generation of children grows up in ignorant homes. But this will not be true of the next generation.

In Los Angeles few Mexican pupils remain longer than through the second grade, which gives them the mere elements of reading and writing; but it takes them longer than American children to advance this far, because they have to learn English. When placed in an ungraded room as an experiment some Mexican children made more progress. Of course there are exceptional cases where children pass beyond the primary grades; and three Mexicans of a better class were attending the polytechnic high school. The children are reported to be tractable and to like going to school. They give no trouble, and their only difficulty comes from the aggressions of a rougher class of white pupils. The girls are said to be moral—better safeguarded either by principle or by home discipline than the lower class of white girls. Mexican children are rather studious by nature, but those in Los Angeles are hampered by poor home surroundings. Partly from lack of home conveniences for washing, the children are apt to come to school dirty. After school baths were installed in one building, there was much improvement in this respect. But Mexicans are prejudiced against water, believing that washing causes fever. After their children have been vaccinated Mexican parents will keep them away from water for weeks, though the parents have superstitious faith in the vaccination itself, as a sort of mystic rite. But it is easier for school authorities to enforce some sort of home hygiene for these pupils, because the Mexicans have much respect for authority and make an attempt to follow official directions.

Irregular attendance retards the progress of Mexican pupils. Boys are sent on errands, and usually have to provide the family with fuel, which they pick up in the streets and around new buildings. Children of both sexes are often absent on feast days and on holy days. Though children are sent to church on these occasions, Mexican parents usually patronize public rather than parochial schools. This does not seem to be from motives of economy; for they make sacrifices to provide their children with text-books, and will not appeal to the authorities for free books, though these can be obtained where parents are themselves unable to provide them. In this matter Mexicans are in strong contrast with Italians, who try to get text-books from the school board after they are well-to-do and taxpayers on city property. A Mexican family almost in distress prefers not to make this appeal, but manages in some way to obtain money for necessary school expenses.

Mexicans excel in design and in the manual arts. At the College Settlement, a social betterment center in a quarter of Los Angeles having many Mexican immigrants, children of that nationality show special skill in tile modeling and in carving blocks of original design for printing patterns on cloth. Teachers say their work is equal to or better than that of pupils in the technical high school.

Mexican boys are not fond of athletic sports, and as a race these people are not aggressive. At a rummage sale the Mexicans stood back while Italians and other Europeans crowded forward and got all the good bargains. Likewise, when a colony of Italians settles in a quarter formerly occupied by Mexicans, the latter quietly move out to a less crowded locality. Sometimes they buy cheap suburban lots on installments, and move their shacks to these places, or buy second-hand building materials where old tenements—frequently condemned—are being torn down, from which they erect rude shelters for their families. In this, as in other ways, the Mexican shows the retiring traits of the Indian and the countryman, even after several years' experience with city life.

Social workers with experience among different nationalities, in Los Angeles and elsewhere, think that there is less illiteracy among the Mexican immigrants than among the Slavs. Superficial observers commonly assume that a knowledge of reading and of writing is as rare among the former as a knowledge of English. This is not entirely true. Several pay rolls of unskilled Mexican laborers were seen, which indicated that from one-half to three-fourths of these workers could at least sign their names. A Spanish-speaking American labor agent in El Paso estimated that 10 per cent of the immigrants could read and write. One old laborer in Los Angeles, who was signing a pay roll, said his children had taught him to write, adding in Spanish: "I'll never go back to Old Mexico, because I have five children in the public school." Wherever there are large Mexican labor camps postmasters report that a large number of letters are sent to Mexico. Though many of these are written by some local "patron," or headman, yet this is by no means always the case. In several instances immigrants passing through El Paso showed letters from a brother or other relative in the United States. A number of Mexican men attend night school in Los Angeles.

The Mexicans are sympathetic—generous not only to their own people, but to those of another nationality in time of trouble. For this reason they seldom become dependent upon public charity. Americans in parts of the country where Mexicans are numerous frequently observed: "There are no Mexican tramps." By this it is not meant that there are not many Mexican laborers traveling on foot from place to place, but these laborers are so in fact as well as name, and seldom apply for assistance except among their own people. At

the time of the San Francisco earthquake, according to settlement workers in Los Angeles, when there was a call for help in making clothing and furnishing other supplies, the Mexican mothers turned out, and in their small way gave more assistance than any other foreigners.

The professional criminal element among Mexicans in the United States appears to be small, but there is a considerable number of occasional criminals. Most arrests are caused by cheap whisky or mescal. The Mexican is not often a sot, but many Mexicans are inclined to short, sharp, periodic sprees. Along the frontier resides a number of parasitic Mexicans, who live off the vices of their more industrious countrymen and the lower class of Americans. This is a disagreeable and at times a dangerous element. Gambling is its main profession. There are so-called "American" towns within the frontier district where public opinion is as decidedly against Mexican immigration as it is against Negro immigration in some white sections of the South. Where there is this opposition to the Mexican, it is usually to the Mexican who becomes a resident rather than to the transient laborer. And it is this resident class that provides most of the criminals and semicriminals.

In 1906 the penal and charitable institutions of Arizona and of New Mexico, not counting county institutions, contained 773 American citizens, 382 Mexican citizens, and 456 persons of other foreign nationalities, while the nationalities of 19 were unknown. In county jails visited a large per cent of the inmates were obviously of Mexican blood, on whichever side the border they might have been born. But in these localities the same predominance of Mexican blood was also obvious outside the jail.

SENTIMENT AND RACE PREJUDICE.

Organized labor, and white workers in general, do not appear to be opposed to Mexicans in the same way that they are to Orientals. There are two main reasons for this; the Mexican immigrant does not compete in occupations which the white worker greatly cares to enter, and he is regarded as something of an American, with more moral right in this country than the Asiatic. One labor editor said: "The Mexicans don't trouble us much, and are not likely to do so unless we have bad times. Then it may be a bad thing to have the country filled up with cheap labor. They can't do white man's work. Besides they were born in this country, or pretty nearly in this country, and have more right to be here than these Japanese and Italians and Greeks." One candid American mechanic said: "They will never pay a Mexican what he's really worth compared with a white man. I know a Mexican that's the best blacksmith I ever knew. He has made some of the best tools I ever used. But they pay him \$1.50 a

day as a helper, working under an American blacksmith who gets \$7 a day." Another workingman said: "The Mexican is all right in his place, and he's not so likely to get out of his place as a Japanese or a Negro." The fact that the Mexican is not socially or industrially ambitious, like European and Asiatic immigrants, counts very much in his favor with white workers.

The race sentiment of Americans toward Mexicans is, like most race sentiment, peculiar and illogical. There is nothing of that stern race consciousness that marks the attitude of the white man in the South toward the Negro. There is more of the tolerance with which Americans have traditionally regarded the Indians. Yet a Mexican can fraternize with Negroes and not lose caste, as would a white man. Negro foremen are employed in Mexican coal mines, directing gangs of Mexican miners. The American Negro considers himself above the Mexican, and yet the latter receives more social recognition from the white man. Perhaps the existence of an upper class in Mexico, distinct from the laboring class and equal socially to Americans, gives even the laborer a better standing in this country. Mexican immigrants ride in white cars in Texas, and might eat at the same table with Americans. Practically there is little social intermingling. Intermarriage is rare, and when it occurs seems to be a subject for apology. This is true even of Europeans. A person familiar with a large mining district, where hundreds of Italians and Mexicans were employed, knew of but a single case where an Italian had married a Mexican. The Mexican does not put himself forward, or seek white society. He observes his own canons of reserve and dignity, which are never offensive.

In Colorado an American said: "There is less race prejudice against an Indian than against a Mexican, and less against a Mexican than against a Negro." This about expresses the situation in the West; but in Texas, where people are more familiar with Mexicans, and a larger proportion of them are residents of the better class, the Mexicans as a body socially far outrank Indians or Negroes. The gradation, from those who associate on terms of equality with Americans to the peon, is so gradual that a race distinction as such hardly exists; and though the preponderant Indian blood of most recent Mexican immigrants can not be dismissed from a consideration of the effect of this immigration, it has not as yet created a race question along our southern frontier.

The economic race contest is not so much between the Mexican and the Negro or the American as between the Mexican and the other nationalities mentioned previously—Italians, Greeks, and Japanese. Japanese compete with Negroes on the Pacific coast in what are called "easy jobs," such as hotel waiters and porters, bootblacks, and servants of different kinds. Mexicans have never entered these

occupations, though a few are employed as coachmen. In Mexico it has sometimes been necessary to place Chinese laborers together in a mine entirely separate from the Mexicans.

The attitude of Americans of Mexican descent toward immigrants from Mexico seems to be friendly, except where there is direct competition between the two. In Colorado the former regard the latter as interlopers, though they are not actively hostile to them. New Mexicans complain that the immigrants can work cheaper, because they have no families with them. The New Mexican is different from the Old Mexican, in that he sometimes objects to working with Negroes. Another evidence of nascent social consciousness is that he considers himself very much above the immigrant, and does not want to be confounded with him in public opinion. This sentiment is observed in parts of New Mexico where labor is so scarce that there is no opposition by the natives to immigration from Mexico on economic grounds. In Texas, where there are labor organizations among resident Mexicans, the latter oppose an inflow of immigrants likely to lower wages; and in some cases they have lodged complaints of alleged violations of the contract labor law.

SOME EFFECTS IN MEXICO.

Incidentally the effects upon Old Mexico of Mexican emigration to the United States have been referred to in treating of the influence of emigration upon the laborer. But there remain to be pointed out some of the economic and social effects felt by that country as a whole.

Labor is scarce in Mexico; that is, not adequate to the demand of the country's expanding industries. In spite of the cry for more labor in the United States in the summer of 1907, Mexican immigrants were being shipped back to the State of Sonora from El Paso at a wage equal to that they would be paid on American railways near the frontier. The Mexican newspapers are filled with discussions of the labor shortage, and contain many dispatches telling of crops unharvested or railways and public works delayed because of the impossibility of securing workers. These reports are from all parts of the country. The authorities in some of the central States at times suspend entirely the right to hire laborers within their boundaries for work in other States. This was done in Querétaro in July, 1907, and in October of the same year a similar provision was revoked in Zacatecas.

Therefore the emigration to the United States, though it withdraws from the labor market but a small fraction of the total supply, may have a decided influence upon wages. Not only does it make the existing shortage more acute, but the influence of returning emigrants is to educate local labor to higher wage demands. An official of a large employing corporation in Mexico, himself an American, said: "The

effect of emigration will finally be to make our wages as high as those in the north. To retain labor so far as we can in the southern portion of the Republic we and other employers of labor have had to advance wages considerably."

This rise in wages exceeds in ratio, to the rate previously paid, the rise of wages in the United States. The increase is not to be attributed solely to emigration. It is perhaps as largely due to mining development, to railway building, and to other local demands for workers. But the movement of labor northward is more dramatic and obvious than its silent absorption by domestic industries, and is therefore given relatively more importance in common opinion.

Within a few years railways have raised the rate of pay for unskilled labor from 50 cents to 62½ cents (Mexican) in the vicinities of the City of Mexico, Guadalajara, and Aguas Calientes. These are the cheap labor districts of the Republic. A railroad contractor, who was employing several thousand men on construction work on the west coast, said that he was paying common labor as high as \$1.25 (Mexican) a day, where he had been paying 50 cents (Mexican) five years ago. This contractor has imported Asiatics, but prefers Mexicans when they can be obtained.

Wages are much lower away from the railways, and even upon railways not affording direct connection with the north. While skilled miners earn \$1.50 (Mexican) a day, according to their employers, around Zacatecas, they are paid but 75 cents (Mexican) a day 60 miles distant in the interior. As recently as 1906, upon the east coast north of Tampico, in country not yet connected with Monterey and Laredo, laborers employed in railway construction were paid but 40 and 50 cents (20 and 25 cents United States currency) a day. This was about the plantation rate. Immigrants at El Paso often reported that their wages on the hacienda where they had been employed were "dos reales" (equivalent to 12½ cents in American money) a day, and this sum was often received in supplies. Five years ago farm laborers in the vicinity of Monterey, within a few hours' ride from the Texas border, were paid a conventional rate of 40 cents (silver) a day. In 1907, even as far south as Aguas Calientes, at least one large estate owner was reported to be paying 60 cents (silver) a day for farm hands. This wage was probably exceptional, since it was paid by an unusually progressive proprietor, who had grappled with the problem of labor scarcity in an intelligent way and was experimenting with steam plows and other modern agricultural implements. As a rule farm wages rise more slowly than those of unskilled labor in other industries, and this rule applies with the more force in Mexico on account of peonage and the patriarchal organization of agriculture. In fact, the "hacendados" are reported to make little effort to keep their labor in face of higher wages elsewhere,

except by preventing open recruiting in their vicinity. Wages are so much a matter of custom in Mexico that to change them is like amending the constitution in another country. So cases are cited where large landowners, formerly rated very wealthy and accustomed to a liberal scale of living, are on the verge of bankruptcy because the labor has drifted away, rendering their estates unproductive. Entire villages have migrated to other parts of Mexico, where employment has been found in the mines or on the railways, or have gone to the United States. This conventional wage rate is uneconomic and unjust to the more industrious workers. An American agricultural expert, who was employed to manage a large "hacienda" in Mexico during the introduction of citrus fruits as a main crop, said that when he first went on the place every workman was credited with 40 cents (20 cents United States currency) a day, without regard for his efficiency and industry. Some men were good workers, others simply loafed and talked, but each received the same pay at the end of the month. When the new manager began to discriminate in wages and discharge the loafers, it was at first considered a cruel and unjust innovation, but ultimately the men who really cared to work saw the advantage of the new system, and much more was accomplished by a few well-paid laborers than had formerly been accomplished by many half-paid "peones."

Ultimately, perhaps, labor scarcity will force most large proprietors to adopt the same system. Many intelligent Mexicans consider that before this happens the large estates will be broken up and the peon become a true peasant proprietor. This is regarded by many liberal-minded people as a most desirable outcome of present conditions, and there are some who welcome the emigration to the United States for this reason.

The rise of wages and lack of labor in Mexico are being met by other measures in which the United States is not unconcerned. Large employers, especially mining companies and railways—but also planters, more particularly in the tropical portions of the Republic—are importing many thousand Chinese and Japanese. There is no effective political opposition to this immigration, and very little criticism of the policy of importing alien labor of another race upon civic or upon social grounds. If the Indian has any sentiment with regard to the question it is unexpressed. Wages are traditionally low in Mexico, and in the face of a large immigration they would probably resume their former level, thus checking the inflow of foreign labor. Other things being equal, native labor is preferred to Asiatic. At the rubber growers' convention in Mexico, in October, 1907, the discussion brought out clearly that Mexican labor was better than Japanese in this industry. After several years' experience, native mining labor is given the preference to imported. A large railway contractor expressed the same preference after

equally extensive experience. All this means, in a word, that Mexican labor is cheaper than Asiatic when it can be obtained. Meantime, if the economic status of the native laborer improves, there will probably come an increase in his intelligence and in his political force, and with it, awakened opposition and power to resist the influx of Orientals.

No very definite effects of their experience in the United States, upon the social ideals of the laborers returning to Mexico, is as yet reported. There are some labor organizations in the latter country, but mostly among a class of workers that does not emigrate. The Government supervises the relations of employers and employees somewhat strictly. During the cotton operatives' strike in 1906, and the more recent mining labor difficulties at Cananea, near the American frontier in northern Sonora, the authorities intervened so sternly as to repress disorder and force the men back to work at the old terms. This intervention was partly to prevent an opportunity for disaffected political elements to take advantage of the crisis. But when there was talk of a strike on one of the large railway systems, the authorities, after an investigation, decided that some of the demands of the employees were just and directed that they be granted. The essence of these later difficulties has been the demand of Mexicans that they be paid the same wage as Americans for the same work; and the Government supports this contention when convinced that Mexican labor does render the same service; but as decidedly rejects it when equal efficiency is not shown. The Mexican laborer who emigrates to the United States usually comes from the agricultural classes, ignorant of the labor movement, and his work in this country does not bring him in contact with trade unionism except at the mines, where he finds it either arrayed against him or apathetic to his interests. In any case, no effort has been made by American unionists to organize the Mexicans, or to dispose them favorably toward labor organizations. An exception to this attitude is found when American-born Mexicans are numerous in any trade. At Tuscon, Ariz., the builders' helpers, mostly or entirely Spanish speaking, have a union, and at Laredo, Tex., there is a labor paper published in Spanish, and an active branch of the American Federation of Labor largely composed of Mexican or Mexican-American members. During the coal strike in Colorado in 1903-4, when Mexicans were employed as strike breakers, they would join the union when urged, and remained faithful to the labor cause so long as they were paid strike benefits. A small income without work seems much better to these people than a large income with work. Yet nearly all the Mexicans engaged in this disturbance, either as union men or as strike breakers, were American born.

If labor organization in Mexico is influenced by returning emigrants to the United States it seems likely that the emigrants will have

received their new ideas indirectly through these Spanish-speaking unions of workers on the American side of the border rather than directly from the organizers and leaders of the labor movement in Mexico.

Among the Latin-American people more than among Americans labor agitation is apt to end in political agitation and, as already suggested, the Government of Mexico, with this fear in view, keeps a close watch over the incipient enterprises of labor reformers. Conditions are not favorable in Mexico to a socialist propaganda. Mexican labor has not yet evolved to that peculiar kind of class consciousness that makes the mind receptive to socialist theories. The masses are ready, perhaps, to adopt any programme handed out to them by a vigorous and ready spoken leader; but they would adopt it on authority, not as a personal conviction, and desert it with perfect unconcern as soon as the leader had fallen.

Therefore, because their contact with American workers is purely one of locality, not of intellectual sympathy, and because they are as yet a people with but rudimentary social experience, the emigrants from Mexico do not carry home with them a burden of new thoughts and ideals likely to revolutionize the intellectual condition of native workers.

In time, of course, if this current of labor continues to flow to and fro between Mexico and the United States social ideas gathered from industrial surroundings in the latter country will begin to permeate the thought of the working classes south of the border. But this process promises at present to be so slow as to be negligible in a study of existing conditions or of those of the immediate future.

In other respects the laborer returns not uninfluenced by his sojourn in another land. His knowledge of ideal things may remain the same, but his knowledge of concrete things has expanded. He has become accustomed to better—at least different—clothing, more varied food, a generally wider material horizon. His consumption has grown. And by his newly acquired wants and his example he is increasing the consuming impulse of the whole Mexican laboring class. It is somewhat to the advantage of Americans that the things he has learned to want are mostly the product of our own country and that the increment to the market is in the demand for American goods. Mexico, too, is benefited by this increased consumption, for it is paid for by additional labor, which develops the country. There is at least a shadow of ground for the contention of some optimistic residents of Mexico that the labor supply of the country is not really lessened by emigration to the United States, because the new needs of the returning laborers make all laborers work the harder. Even if this compensating outcome is not so immediate as these people hold it will probably come ultimately in the greater aggregate laboring power of the nation.

The relation of the Mexican laborer to his employer has been modified by many new conditions, of which the emigration to the north is perhaps the most typical. The workingman is no longer so dependent on his "patron" as formerly. He changes employers more frequently and freely. He expects cash wages and offers a sort of passive resistance to many forms of industrial oppression to which he used to submit without question. A coal mining company employing several thousand men formerly paid monthly, issuing in the interval scrip to the miners, which was accepted at par for goods, but discounted 40 and 50 per cent by speculators for cash. Many of these speculators worked in collusion with higher employees of the company. At this time the men were receiving 55 cents (27½ cents United States currency) per ton for getting out coal. A shrewd Yankee contracted part of the mine for a long period, and began to pay 45 cents (22½ cents United States currency) a ton to his miners, but gave them their earnings in cash every evening. Soon he had several hundred of the best workers of the company, recruited by it at great expense, in his part of the mine; and his success and competition forced the company to adopt the same plan of payment. With cash wages the men bought their supplies on better terms, and in general they were more independent; but the company permitted no competing store upon its property. A rival company went one step further and permitted competing stores to locate in the vicinity of its mines. Now it has abundant labor at the expense of its competitor. As an English mine manager in a different part of the country said: "The Mexicans are learning to dislike to be shepherded."

Not only is the Mexican learning to look upon his relations with his employer as a matter of contract rather than of dependence, and therefore changing employers more freely, but also he is learning to change his occupation. The differentiation in occupations accompanying the industrial development of the country—and made still greater by the wider sphere of employment opened to the Mexican laborer by emigration—is giving the worker greater diversity of training, and thereby making him more intelligent. Managers of mines, of smelters, and of railways in Mexico mentioned the improvement of their labor, due to increased experience and training, within the past few years; and it was generally thought that emigration was an added influence in the same direction. Even some of those who most deplored the temporary loss of labor due to this cause congratulated themselves that these migrating workers returned better qualified for work than they were when they left.

Upon the whole, the balance of advantage or disadvantage to Mexico from this migration of its labor northward is not at once clear. There can be seen certain specific benefits for the individual laborer, and at longer range benefits for the entire laboring class of the coun-

try, from the higher wages and added experience the emigrants get in the United States. Returning emigrants bring back some money with them. On the other hand, the labor shortage in their home country leads to the importation of Asiatics—which might occur in any case—and undoubtedly makes more difficult new industrial undertakings, while it embarrasses old ones. Still the volume of this emigration as yet is not large enough to be of vital importance, even to a thinly populated country like Mexico. Should this labor migration increase, as recent indications promise, it will be a serious matter for that country to consider.

SOME EFFECTS IN THE UNITED STATES.

So long as the Mexican immigration is transient it is not likely to have much influence upon the United States, except as it regulates the labor market in a limited number of occupations and probably within a restricted area; for transient labor is not likely to be largely employed beyond a certain radius from El Paso and the Rio Grande, or to enter lines of employment in which it competes with citizen labor. But the Mexicans are making their homes in the United States in increasing numbers and, being assimilated by the Spanish-speaking population of the Southwest, are forming the civic substratum of our border States. The proportion of the immigrants who ultimately take up a permanent residence north of the border is entirely a matter of estimate. As this immigration has assumed importance since the census of 1900, figures derived from the census reports do not indicate present conditions and tendencies. Nevertheless, the following table gives the statistical background for the subject, so far as one exists:

MEXICAN POPULATION AND PER CENT OF MEXICAN OF TOTAL POPULATION IN THE UNITED STATES AND IN CERTAIN BORDER STATES AND TERRITORIES, 1880, 1890, AND 1900.

Locality.	1880.		1890.		1900.	
	Mexican-born population.	Per cent of total population.	Mexican-born population.	Per cent of total population.	Mexican-born population.	Per cent of total population.
Arizona.....	9,330	23.06	11,534	19.35	14,172	11.53
California.....	8,648	1.00	7,164	.51	8,086	.54
New Mexico.....	5,173	4.32	4,504	2.93	6,649	3.40
Texas.....	43,161	2.71	51,559	2.31	71,062	2.33
Border States and Territories.....	66,312	2.54	74,761	2.04	99,909	2.06
Total United States.....	68,399	.14	77,853	.12	103,410	.14

Up to 1900 very few Mexicans had emigrated beyond the border States and Territories. For instance, Colorado, which now employs several hundred Old Mexicans transiently, had but 274 residents of that nationality in the last census year. Louisiana had 488. Colorado, however, had 10,222 residents, mostly in the mining counties around Trinidad, who had been born in New Mexico.

The table shows that between 1880 and 1890 the Mexican-born population increased more slowly than the total population; but that during the following decade it increased at a more rapid ratio than the total population, both in the United States as a whole and in all the border districts except Arizona. In 1880 Mexicans comprised 1.01 per cent of the total foreign-born population of the United States; in 1890, 0.9 per cent, and in 1900, 1 per cent, showing the same general tendency of variation as to the total population. Of the more than 5,000 immigrants who passed through El Paso in September, 1907, not one expressed the intention of becoming an American citizen. The only one of several score questioned at the immigration station who had this intention was a skilled mechanic, of quite a different class from the main body of immigrants. Nevertheless, Mexicans are settling permanently, especially in Texas and California. Two persons in a position to be unusually well informed upon the subject, one of them a general official of a railway carrying immigrants to the frontier, estimated that 50 per cent of those who visited the United States finally made their home there. Upon the Mexican Central Railway, which moves more immigrants than any other single road in Mexico, the official estimate of third-class passengers (laborers) crossing the frontier northward during the twelve months ended with August, 1907, was 50,000, and the return traffic during the same period was estimated to be 37,000. However, the proportion of those passing through El Paso who return is larger than of those crossing the lower Rio Grande, because so much of the former labor is employed on railways and in mines in the desert, where there is little temptation to make a permanent home. Immigrants through El Paso are seldom accompanied by their families, while many women and children cross at Laredo, especially to pick cotton. A prominent Mexican merchant in San Antonio, Tex., said: "Mexicans who have come to the United States seldom go back to stay, because conditions are better here, and because they are not kept down so much in this country." The superintendent of public instruction of Arizona stated that in the southern counties of that Territory nearly one-half the children enrolled in public schools have foreign-born parents, mostly Mexicans, but that very few of these children were born in Mexico. In California Mexican laborers were said to be accompanied by their families, and to be settled in little colonies near a number of the larger towns; but in Colorado there was no evidence that the immigrant Mexicans have come to remain. An evidence of increasing settlement in Texas is the large number of excursionists that return to Mexico each year to attend the religious festivals at Aguas Calientes and at the City of Mexico. These people, though Mexican born, buy return tickets to Texas.

The transition in Texas from an immigration of temporary laborers to one of settlers was thus described by a railroad official who had

observed it from the outset: "Ten years ago our Mexican immigrants were chiefly men. It was rare to see a woman among those who came through here from any distance down the line. About 1900, men who had been in the United States and returned to Mexico began to bring back their families with them. Usually they were also accompanied by a number of single men, or married men without their families, who had never before been in this country. Most of the men who had families with them did not go back the following season, but the men without their families did, and some of them in turn came back the next year with their families to remain permanently. So the process goes on, with, I believe, a larger proportion of women and children among the immigrants each year, and a larger proportion remaining in this country."

The Bishop of Texas diocese (Roman Catholic) stated that many thousand immigrants from Old Mexico were settling in his parishes, and that the increase of Mexican population was general throughout the southern part of the State.

Probably a conservative estimate of the proportion of the immigrants remaining permanently in the United States would be from one-fourth to one-third. The number is probably in the neighborhood of 20,000 per annum. In the lack of more definite data than is possessed at present the number can only be estimated—and the estimate has possibly a wide margin of error—because this annual increment to the permanent Mexican population of the country settles over such a wide area that its presence is hardly perceptible except in large city colonies.

Americans of Mexican descent take an active part in local politics and have their bosses and machines like English-speaking Americans. In New Mexico they were said to make very fair citizens, though more apt to be loyal to personal leaders than to political parties. The immigrants, even if they make their home in this country, seldom become naturalized. The records at San Antonio show that before the Federal naturalization law went into operation the number of persons with German names who became citizens was eight or nine times the number of those bearing Spanish names, though the Mexican population of Bexar County is over one-third the total foreign-born residents. In the entire State in 1900 the Mexican population was 39.6 per cent of the total foreign-born population, and doubtless has been increasing relatively since that year. Those Mexicans who become naturalized have usually resided in the United States for many years, sometimes for the greater part of their lives. It is not unusual for several persons of the same family name to acquire citizenship at the same time, probably to facilitate the settling of an estate or for some other legal purpose.

Spanish-speaking citizens consider themselves socially superior to the immigrants, and rather pride themselves on being Americans.

There is for this reason less social intermingling than the identity of language, religion, and customs might lead one to expect. The "Americanization" of the Spanish-speaking population of the Southwest is proceeding much more rapidly at present than heretofore, partly because these people are themselves migrating temporarily or permanently to English-speaking sections of the country, and partly because of the large immigration from other parts of the Union. The history of Las Vegas, N. Mex., indicates how this change affects civic ideals. The original Mexican town in the river valley antedates the advent of the American. When the railway was built an American town grew up in its vicinity, possibly a mile from the center of the older village. Later the two places were incorporated as a single city. But this arrangement was unpopular with the Mexicans, used to more primitive political arrangements and averse to taxation, and through their influence the town was disincorporated. The American town then went ahead, incorporated separately, constructed public works, and built up an excellent system of public schools, including a high school, housed in fine buildings. After several years the Mexican town finally incorporated separately, and now is following the example of its neighbor in the matter of improvements and school facilities. So this New Mexican and largely Spanish-speaking community is now taxing itself more heavily than many a town in the East for public education, and has issued bonds and erected creditable schoolhouses. This case is fairly representative of what is taking place wherever the railway and American example are bringing the influence of other sections of the country to bear upon the native population. An educational officer, who himself spoke Spanish fluently, whose duties made him familiar with conditions in the southern part of Colorado, said that a marked language change had occurred within ten years, so that while formerly it was comparatively rare to meet a person of Mexican race who spoke English, it was now rare to meet a young "Mexican" who was not familiar with that language.

These changes to American habits of life in the home, and to American civic ideals in the community, coupled with the gradual acquisition of English in the public schools, are all recent. The public school system of New Mexico is but fifteen years old, and railways have been in the territory less than a generation. They have as yet influenced appreciably only that part of the so-called Mexican population that has been born in the United States. At present the immigrant Mexican does not seem likely to be assimilated by our own people; that is, actual fusion of blood appears to be remote. But barring this, which may not be permanent, he may learn to understand our institutions and adopt our habits of thought and action in public affairs.

COST OF LIVING OF THE WORKING CLASSES IN THE PRINCIPAL INDUSTRIAL TOWNS OF THE GERMAN EMPIRE.

SCOPE OF THE INVESTIGATION.

Under the above title is presented the results of an investigation undertaken by the British Board of Trade in the 33 principal industrial towns of the German Empire in order to obtain, in regard to the condition of the working classes therein, information comparable with that given for the principal industrial towns of the United Kingdom in the report on the "Cost of Living of the Working Classes," presented to Parliament in December, 1907, by the Labor Department of the Board of Trade.^a The investigation has reference primarily to the rents of working-class dwellings, to the prices usually paid by the working classes for food and fuel, and to wages and hours of labor. It was conducted so far as practicable on lines identical with the inquiry for the towns of the United Kingdom, and the statistical material collected relates in the main to the same date (October, 1905), though in some instances, particularly in regard to prices and wages, information was procured for a later date (March-April, 1908).

In order to arrive at some estimate of the standard of living among the German industrial classes, over 5,000 budgets showing the expenditure for food by working-class families in a normal week, and representative of numerous occupations and of all grades of incomes, were obtained from the various towns investigated. These towns contain an aggregate population of some 9,000,000.

Any exact statistical comparison of cost of living in Germany with cost of living in England is not a simple matter. Even when all the difficulties of maintaining the same standard of investigation throughout have been successfully overcome there remains a difficulty inherent in the nature of things arising from the different habits and modes of living in the two countries. The point is well illustrated by the result obtained from the present investigation, "that an English workman migrating to Germany, and maintaining, so far as possible, his own standard of living would find the cost of rent, food, and fuel raised by about one-fifth, while the German workman who migrated to England, but retained his own habits of living, would find his

^a See Bulletin of the Bureau of Labor, No. 77, July 1908, pp. 336 to 354.

expenditure on the same items reduced by less than one-half that amount."

As a basis of comparison for the German towns among themselves the levels of rents, prices, and wages in Berlin have been taken as standards, and index numbers calculated for each of these items in every town, so as to afford an indication of the relative levels of the towns. The index numbers for rents and prices in each town have also been combined in a single index number, in order to determine the relative level for each town of the cost of living of the working classes, so far as it consists of expenditure for housing and food, and for this purpose, as the expenditure for food is much greater than that for rent, prices have been given a weight of 4 and rents a weight of 1 in the construction of the combined index number. The comparison of the rates of wages has been confined mainly to occupations in certain standard industries, as in the United Kingdom report, namely, the building trades, engineering (mechanical), and printing, which are found to a greater or less extent in all the towns. The general result of the comparison is that in German towns the workmen engaged in these industries receive about 17 per cent less in money wages in return for a week's work of about 10 per cent longer duration than the corresponding English workmen. In other words, their hourly rate of money remuneration is about three-fourths of the corresponding English rate, while the cost of food, rent, and fuel (measured by the English standard) is about one-fifth higher.

According to the report for the United Kingdom the prevailing type of dwelling occupied by the working classes in England and Wales, and to a less degree in Ireland, is a self-contained two-story dwelling, possessing generally four or five rooms and a separate scullery; in Germany the predominant type is a flat of two or three rooms with appurtenances, in a large tenement house. The German housing system, therefore, approximates more closely to the Scottish type—blocks of flats of two, three, or four stories—than to the English. English rents of working-class dwellings usually include local taxation, which is based on the rentable value of the dwellings; in Germany local taxation is levied on an entirely different basis, and is not included in rent. In regard to food the British workman's meat consists mainly of beef and mutton, while pork (even including bacon) is relatively small in amount; the German workman, on the other hand, eats chiefly pork (including sausage) and beef, and only a very little mutton. The pure wheat bread eaten by the working classes of the United Kingdom is replaced in Germany either by pure rye bread or, more commonly, by some mixture of rye and wheat. These are only a few indications of the difficulties which arise in international comparisons, and it seems desirable to repeat the warning that

in the construction of comparative index numbers it is impossible to make full allowance for diversity of national habits, tastes, and prejudices.

It may be pointed out that there is little if any difference between the general levels of rent in Germany and rent in England, though rents in England include a considerable element of local taxation, while rents in Germany do not; and that rents in Berlin exceed those of all the other German towns investigated (except Stuttgart) to practically the same extent as rents in London exceed those which prevail in other towns of the United Kingdom. Further, the range of town price levels in Germany, as in the United Kingdom, is not very great, though somewhat wider in the case of the German towns, with the result that the differences between the cost of living (so far as it relates to the expenditure for rent, food, and fuel) in one or another of the German towns investigated are not very much larger than those which exist between the towns of the United Kingdom. The general level of prices is, however, distinctly higher in Germany than in the United Kingdom, and in this connection an important instance of the effects of differences in national habits may be noticed. The English workman going to Germany and maintaining his accustomed standard of living would find his expenditure for food and fuel substantially increased; but in spite of the generally higher level of prices in Germany the German workman coming to England, and maintaining his own standard, would not find his expenditure reduced in a corresponding proportion. This is due mainly to the fact that the German workman takes much more than the English workman of certain food commodities, chiefly potatoes and milk, which are cheaper in German than in English towns. Finally, while nominal rents are as high in Germany as in England—and in fact higher, since they do not include local taxation, which the German workman must pay separately—and also while the general level of food prices in the German towns is higher than in England, wages in those trades for which a comparison has been made are substantially lower, even when longer hours are worked.

In addition to obtaining information comparable with that given in the report on the "Cost of living of the working classes in the principal industrial towns of the United Kingdom," much information was obtained as to the general conditions of industrial life and labor in Germany, including such matters as the distribution of occupations and organization of industry, wage agreements and hours of labor, factory rules, workmen's societies and institutions, housing, public health administration, vital statistics, municipal enterprises, and local taxation. Besides those used for purposes of comparison, the industrial occupations covered by the reports is of wide range.

RENTS OF WORKING-CLASS DWELLINGS.

THE GERMAN EMPIRE.

In order to ascertain the rents paid for the kind of dwellings usually occupied by the German working classes, information was obtained from the municipal authorities, from individual house owners, and from large numbers of tenants through the trade unions. In each town a number of houses were visited by the investigators, partly for the purpose of verifying the information obtained as to rents and partly that some account might be given in each case of the general character and standard of housing accommodation.

The prevalent type of working-class dwelling in Germany, as already stated, is a flat in a large house, containing a minimum of six or seven tenements. This may fairly be described as the common type of housing accommodations for all classes in Germany, and it is a characteristic feature of German towns that, while there are purely working-class districts, yet the working classes are generally scattered throughout the whole of a town, occupying either the upper floors of houses whose lower floors may be occupied by middle-class tenants, or else housed in buildings which lie concealed behind the better-class houses visible from the street. In some of the larger towns these houses with many tenements resemble large barracks built around small paved courtyards, there being in addition to the block fronting upon the street another block lying behind and parallel to it, and not infrequently also one or more side blocks either isolated or running back from the front block and connecting it with the one at the rear. The rents in these back and side houses are as a rule lower than those paid in the front blocks. In the more modern constructions there are many variations of this plan, tending on the whole to the elimination of either the back or the side blocks or of both.

The traditional and still normal working-class dwelling in such a house consists of three rooms (living room, bedroom, and kitchen), together with certain appurtenances, such as a share of the cellar for the storage of fuel, etc., and even for laundry use, and the use (on a particular day) of a loft for drying purposes. Many of the newer tenements have at the front or back a balcony, which is used in this latter way also. Two-room tenements, usually with appurtenances, are also very common, and these two types (with the three-room tenement predominant) may be taken as representing the prevalent standard of working-class housing throughout Germany. Four-room tenements are of importance in this connection only in rare cases; tenements of one room, though fairly frequent, are not sufficiently so to be regarded as constituting an important type,

while working-class dwellings of five or more rooms are scarcely to be found.

From rent quotations obtained for over 107,000 working-class tenements the following table has been constructed to show the predominant range of weekly rents for tenements of various sizes in Germany as a whole, excluding Berlin. It should be stated that the rents include the charge for water, and in some cases small charges for chimney sweeping and the removal of refuse; but they do not include any element of local taxation.

WEEKLY RENTS IN TOWNS OF GERMANY (EXCLUDING BERLIN).

Number of rooms per tenement.	Number of towns to which figures relate.	Predominant range of weekly rents.	Number of towns in which the mean rent is—		
			Within the limits of the predominant range.	Below the limits of the predominant range.	Above the limits of the predominant range.
Two rooms.....	22	\$0.65–\$0.85	13	5	4
Three rooms.....	32	.85– 1.16	19	6	7
Four rooms.....	15	1.03– 1.46	8	3	4

From the above table it will be seen that the three-room tenement was found to be an important type of working-class housing in every one of the towns investigated, that two-room tenements were of importance in two-thirds of the towns, and four-room tenements in rather less than one-half of the total number.

A comparison of the predominant range of rents (except for four-room tenements), given in the above table, with those shown for Berlin, reveals the extent to which rents in the metropolis exceed those which prevail in other German towns. The contrast is brought out in the following brief table:

WEEKLY RENTS IN BERLIN AND IN OTHER GERMAN TOWNS COMPARED.

Locality.	Predominant range of weekly rents for—	
	Two rooms.	Three rooms.
Berlin.....	\$1.22–\$1.46	\$1.70–\$2.25
Other German towns.....	.65– .85	.85– 1.16

Thus, while the mean rent for two rooms in Berlin is \$1.34, in the other towns as a whole it is only \$0.75, and for three rooms in Berlin it is \$1.97½, and elsewhere only \$1.00½. It may be noted that rents are nearly as high in Stuttgart as in Berlin, the mean weekly rents for two and three rooms in that town being \$1.26 and \$1.97½, respectively.

In the table following is shown the predominant range of weekly rents for tenements of two, three, and four rooms in the 33 towns of the Empire investigated.

WEEKLY RENTS IN 33 GERMAN TOWNS.

Town.	Predominant range of weekly rents for—		
	Two rooms.	Three rooms.	Four rooms.
Aix-la-Chapelle	\$0.65-\$0.85	\$0.85-\$1.12	
Aschaffenburg		1.12-1.40	
Barmen	.50-.83	.83-1.40	
Berlin	1.22-1.46	1.70-2.25	
Bochum	.73-.91	.73-1.40	
Bremen		.85-1.12	\$1.12-\$1.32
Breslau	.70-.80	.85-1.12	
Brunswick		.57-.85	.71-.97
Chemnitz		.57-.79	.97-1.12
Crefeld	.71-.85	.85-1.12	1.05-1.26
Danzig	.57-.73	.85-1.12	
Dortmund	.85-.97	1.26-1.46	
Dresden		.93-1.26	.97-1.40
Düsseldorf	.97-1.22	1.30-1.70	
Elberfeld	.61-.85	.97-1.40	
Essen	.67-.87	.89-1.40	1.40-1.87
Hamburg		1.12-1.40	1.40-1.70
Königsberg	.81-.97	1.03-1.28	
Königshütte	.53-.67	.85-1.12	
Leipzig		.85-1.01	1.07-1.40
Magdeburg		.71-.89	
Mannheim	.79-.89	1.01-1.30	1.40-1.95
Mülhausen	.49-.67	.79-1.12	1.12-1.34
Munich	.73-.97	1.01-1.40	
Nuremberg		.86-1.22	1.03-1.40
Oschersleben		.43-.59	.71-.85
Plauen	.59-.71	.81-.93	1.28-1.64
Remscheid	.73-.85	.85-1.26	
Solingen	.73-.85	.85-1.40	1.40-1.70
Stassfurt	.43-.55	.57-.61	.60-.85
Stettin		.79-.95	
Stuttgart	1.12-1.40	1.70-2.25	
Zwickau	.49-.57	.57-.85	

In the following table index numbers are given showing the relative rent level in each of the towns canvassed as compared with Berlin. Rents of two and three room tenements only were obtained for Berlin, the rents of four-room tenements there being beyond the means of the working classes. As four-room tenements constituted an important type in several other towns, it was not possible to use the predominant range of rents in Berlin directly as the basis for comparison for the rent levels of the several towns, hence the following method was adopted. The means of the predominant rents for each class of tenements in the whole of Germany (excluding Berlin), as shown in the table on page 527, were taken as the base and the ratios of the mean predominant rents for the corresponding classes in the various towns as compared with this base were calculated. The average of the ratios for the various types of houses in each town gave an index number for the town as compared with the level for the German towns as a whole, excluding Berlin. The index number for Berlin, computed in the same way, was then taken as the base (or 100) and the index numbers for the other towns adjusted accordingly.

RELATIVE RENT LEVEL OF GERMAN TOWNS AS COMPARED WITH BERLIN.

Town.	Index number.	Town.	Index number.	Town.	Index number.
Berlin.....	100	Bochum.....	57	Leipzig.....	51
Stuttgart.....	97	Elberfeld.....	57	Danzig.....	49
Düsseldorf.....	79	Barmen.....	57	Mülhausen.....	48
Dortmund.....	68	Remscheid.....	56	Königsbütte.....	47
Aschaffenburg.....	67	Breslau.....	56	Stettin.....	46
Hamburg.....	66	Dresden.....	54	Magdeburg.....	43
Mannheim.....	64	Nuremberg.....	53	Chemnitz.....	40
Königsberg.....	62	Alx-la-Chapelle.....	53	Zwickau.....	38
Münch.....	62	Crefeld.....	52	Brunswick.....	37
Essen.....	62	Bremen.....	52	Stassfurt.....	33
Solingen.....	61	Plauen.....	52	Oschersleben.....	28

THE GERMAN EMPIRE AND GREAT BRITAIN COMPARED.

A comparison of the predominant range of weekly rents in England and Wales with the predominant range in Germany for tenements of two, three, and four rooms is presented in the table following:

WEEKLY RENTS IN ENGLAND AND WALES AND IN GERMANY COMPARED.

Number of rooms per tenement.	Predominant range of weekly rents in—		Ratio of mean predominant rent in Germany to that in England and Wales, taken as 100.
	England and Wales.	Germany.	
Two rooms.....	\$0. 72-\$0. 85	\$0. 65-\$0. 85	95
Three rooms.....	. 91- 1. 10	. 85- 1. 10	100
Four rooms.....	1. 10- 1. 34	1. 00- 1. 40	102. 5

The above table shows an approximate equality of rents that is quite remarkable, more particularly when it is remembered that the English rents cover all local taxation while the German rents do not. If the mean of the index numbers in the last column might be taken as representing roughly the rent level in Germany as compared with that in England, we should find the German rent level slightly the lower of the two—in the ratio of 99 to 100. A comparison on these lines is, however, liable to be somewhat misleading, for the reason that rents of two, three, and four room tenements were not obtained from all the towns investigated in each case. It is necessary, therefore, to adopt some more exact method of comparison less open to possible bias. This has been done by reworking all the rent index numbers for the German towns to the basis used for Great Britain, viz, comparing the mean predominant rents of the types of tenements shown for each town in Germany with the mean predominant rents shown for tenements of the same size in the middle zone of London, and using as the index number in each case the average of the percentages so obtained. The resulting index numbers for the German towns investigated,

shown in the table below, are accordingly directly comparable with the index numbers for the English towns shown in the report for the United Kingdom. It may be noted as a coincidence that this method of comparison gives for Berlin the index number 100, as shown in the table, but it should be borne in mind that the predominant rents in the middle zone of London represent the base (100) in every case.

RELATIVE RENT LEVEL OF GERMAN TOWNS AS COMPARED WITH THE MIDDLE ZONE OF LONDON AS THE BASE (100).

Town.	Index number.	Town.	Index number.	Town.	Index number.
Berlin.....	100	Elberfeld.....	58	Plauen.....	53
Stuttgart.....	97	Barmen.....	57	Danzig.....	40
Dusseldorf.....	79	Bochum.....	57	Mülhausen.....	40
Hamburg.....	70	Dresden.....	57	Stettin.....	48
Aschaffenburg.....	69	Breslau.....	56	Königshütte.....	47
Dortmund.....	68	Nuremberg.....	56	Magdeburg.....	44
Mannheim.....	66	Remscheid.....	56	Chemnitz.....	42
Essen.....	63	Bremen.....	55	Brunswick.....	39
Königsberg.....	62	Leipzig.....	54	Zwickau.....	38
Munich.....	62	Aix-la-Chapelle.....	53	Stassfurt.....	34
Sollingen.....	62	Crefeld.....	53	Oechersleben.....	28

The whole series of numbers is very similar to that given for English towns, but the rent levels of German towns show a somewhat greater variation than those in the English table. The ratio of the arithmetic mean for Germany to that for England is 101 to 100, and this ratio, or the index number 101, is taken for the purposes of this report as representing approximately the rent level in Germany as compared with England. While from the preceding estimate there appears no great difference one way or the other between the rents payable for a given number of rooms of working-class accommodation in the industrial towns of the two countries, there is, however, as already mentioned, a very important difference between the services obtained for the payment of rent in England and in Germany. When an English workman has paid his rent he has in nearly all cases not only paid for the use of the rooms that he occupies but also for all the services provided by the local authority out of the rates. In Germany local taxation is paid by means of an addition to the State income tax and, consequently, the workman who has paid his rent has nevertheless still to pay taxes.

It is estimated that approximately 18 per cent of the rent paid by the British workingman goes for local taxation. This makes the German rents bear to English rents the ratio of 101 to 82, which is equivalent to 123 to 100.

RETAIL PRICES.

THE GERMAN EMPIRE.

Information as to the prices commonly paid by the German working classes for food commodities, for fuel, and for paraffin oil was obtained from a large number of shopkeepers in each of the towns investigated and also from the cooperative societies where these existed. It must be remembered that the prices shown are not necessarily the minimum prices at which the commodities could be obtained, but simply the prices which the working classes did in fact usually pay in the month of October, 1905, and where a range of prices is given it is because they appear to be of equal popularity. The differences between one town and another, accordingly, represent often not so much differences in the cost of identical commodities as variations in local tastes and sometimes in local standards of comfort.

The following table presents the predominant range of retail prices commonly paid by the working classes for certain commodities, for Germany as a whole (including Berlin):

RETAIL PRICES OF COMMODITIES IN TOWNS OF GERMANY, OCTOBER, 1905.

Commodity.	Unit.	Number of towns included.	Predominant range of retail prices, October, 1905.	Number of towns in which the mean predominant price is—		
				Within the limits of the predominant range.	Below the limits of the predominant range.	Above the limits of the predominant range.
Coffee.....	1 pound...	33	\$0.22 - \$0.26	22	3	8
Sugar, granulated.....	do.....	33	.04 - .05	24	4	5
Bacon.....	do.....	33	.18 - .22	30	2	1
Cheese, Dutch.....	do.....	12	.18 - .20	8	1	3
Cheese, Limburg.....	do.....	27	.10 - .13	23	3	1
Butter.....	do.....	33	.26 - .30	27	2	4
Margarin.....	do.....	32	.16 - .18	25	6	1
Potatoes.....	7 pounds..	33	.04 - .06	25	5	3
Flour, wheat.....	do.....	33	.23 - .28	20	7	6
Bread, gray.....	4 pounds..	32	.10 - .13	27	3	2
Milk.....	1 quart.....	33	.05 - .06	25	7	1
Beef.....	1 pound...	33	.16 - .18	26	6	1
Pork.....	do.....	33	.18 - .22	29	4	.....
Coal.....	1 cwt.....	31	.22 - .32	19	6	6
Paraffin oil.....	1 gallon...	33	.19 - .22	30	1	2

In the following table is shown the predominant range of retail prices of the principal commodities in 12 towns of Germany, selected as to certain geographical districts:

RETAIL PRICES OF COMMODITIES IN 12 SELECTED TOWNS OF GERMANY, OCTOBER, 1905.

Commodity.	Unit.	Berlin.	Breslau.	Danzig.	Dresden.
Coffee.....	1 pound..	\$0.22	\$0.22	\$0.18	\$0.22
Sugar, granulated.....	do.	\$0.05-0.05½	.04	.04	.05
Bacon, fat.....	do.	.18-21	\$0.20-22	.20	\$0.20-22
Bacon, streaky.....	do.	.20-24	.20-21	.20	.20-22
Eggs.....	1 dozen..	.17	.16	.23	.21
Cheese:					
Dutch.....	1 pound..	.18			
Limburg.....	do.	.11-13	.16		.13
Swiss.....	do.	.22		\$0.18-20	
Butter.....	do.	.26-29	.29-30	.29	.30-31
Margarin.....	do.	.18	.13	.16	.18
Potatoes.....	7 pounds..	.04-.04½	.04-.05	.03½	.04-.05½
Flour, wheat.....	do.	.31	.20	.22-23	.31
Flour, rye.....	do.	.23	.17-19	.17	.25-28
Bread, gray.....	4 pounds..	.11	.10	.11	.10-12
Bread, black.....	do.	.10			
Milk.....	1 quart..	.05-½	.04½	.04½	.05½
Coal.....	1 cwt.	.30	.25	.28-32	.26
Paraffin oil.....	1 gallon..	.22	.20	.20	.19-20
Beef:					
Ribs.....	1 pound..	.16-18	.18-19	.14	.16
Silverside.....	do.	.18-22	.20	.17	.18-22
Shin, with bone.....	do.	.13	.16-18	.09	.18
Shin, without bone.....	do.	.16	.20-21		.20
Steak.....	do.	.22-26	.33	.20	.26-31
Flank.....	do.	.13-16	.18	.16	.16
Mutton:					
Leg.....	do.	.19-20	.22	.18	.20-22
Shoulder.....	do.	.17-20	.20-22	.17	.20
Breast.....	do.	.16	.20	.17	.16-18
Neck.....	do.	.16	.22	.16	.18
Chops, trimmed.....	do.	.20-22	.22-24	.19	.22
Pork:					
Leg.....	do.	.17-19	.20	.17-18	.20-22
Foreloin.....	do.	.18	.20	.17	.20-22
Belly.....	do.	.14-18	.18-19	.17	.18
Spare ribs.....	do.	.19-21	.20	.18	.22-26
Chops.....	do.	.22-24	.24	.20	.22-26
Veal:					
Hind quarter.....	do.	.20-24	.22	.18	.20-22
Shoulder, with bone.....	do.	.18	.22	.14-17	.18-20
Shoulder, without bone.....	do.	.26	.23-31	.26	.22-26
Shin.....	do.	.16	.18-22	.09-11	.13
Loin.....	do.	.20-22	.26	.18-22	.20-22

Commodity.	Unit.	Dusseldorf.	Essen.	Hamburg-Altona.	Leipzig.
Coffee.....	1 pound..	\$0.22	\$0.20-0.22	\$0.20	\$0.22-0.26
Sugar, granulated.....	do.	.05½	.04-0.05	.04½	.05
Bacon, fat.....	do.	.20	.18-21	.20	.19-22
Bacon, streaky.....	do.	.22	.19-21	\$0.20-22	.20-22
Eggs.....	1 dozen..	.22	.19-27	.17-21	.21
Cheese:					
Dutch.....	1 pound..	\$0.20-21	.18-19	.20-22	
Limburg.....	do.	.11	.10-11	.12	.09-10
Swiss.....	do.	.21-22	.22-24	.22-26	
Butter.....	do.	.29-31	.26-31	.24-26	.29-31
Margarin.....	do.	.16	.12-18	.11-13	.18
Potatoes.....	7 pounds..	.04½	.04½	.05½	.04½-0.05½
Flour, wheat.....	do.	.23	.22-23	.22	.25-28
Flour, rye.....	do.		.19-22	.19	.20
Bread, gray.....	4 pounds..	.11-12	.13	.10-11	.10
Bread, black.....	do.		.06-09	.08-09	
Milk.....	1 quart..	.05½	.05	.05½	.05
Coal.....	1 cwt.	.23	.17-22	.23-26	.30
Paraffin oil.....	1 gallon..	.19	.19-20	.17-18	.22
Beef:					
Ribs.....	1 pound..	.17	.14-16	.16	.17-18
Silverside.....	do.	.16-19	.14-16	.17	.20-22
Shin, with bone.....	do.	.14-16	.14	.10-11	.14-19

^a Tilsit cheese.

RETAIL PRICES OF COMMODITIES IN 12 SELECTED TOWNS OF GERMANY, OCTOBER, 1905—Concluded.

Commodity.	Unit.	Dusseldorf.	Essen.	Hamburg-Altona.	Leipzig.
Beef—Concluded.					
Shin, without bone	1 pound	\$0.22		\$0.13-\$0.14	\$0.18-\$0.22
Steak	do.	.26	\$0.22	.29-.35	.20
Flank	do.	\$0.14-.16	\$0.13-.16	.16-.18	.18
Mutton:					
Leg	do.	.19-.20	.16-.20	.20	.20
Shoulder	do.	.18	.16-.18	.20	.17-.18
Breast	do.	.13-.14	.14-.18	.20	.17-.18
Neck	do.	.13-.14	.14-.18	.16-.20	.17-.18
Chops, trimmed	do.	.18-.20	.20-.22	.20-.24	.18-.20
Pork:					
Leg	do.	.20-.22	.18-.20	.18-.20	.18-.20
Foreloin	do.	.20-.24	.18-.22	.20	.18-.20
Belly	do.	.20	.16-.20	.18	.18
Spare ribs	do.	.22	.16-.20	.18	.20-.22
Chops	do.	.22	.18-.22	.20-.22	.22
Veal:					
Hind quarter	do.	.20-.21	.18-.20	.20	.20
Shoulder, with bone	do.	.18-.19	.18-.20	.18	.18
Shoulder, without bone	do.	.26		.20-.22	
Shin	do.		.18	.13-.16	.13
Loin	do.	.31	.22	.22	.20-.22

Commodity.	Unit.	Magdeburg.	Munich.	Nuremberg.	Stuttgart.
Coffee	1 pound	\$0.22	\$0.22-\$0.26	\$0.22-\$0.26	\$0.22-\$0.26
Sugar, granulated	do.	.04	.06	.06	.06
Bacon, fat	do.	.20	.18-.20	.22-.24	.18-.19
Bacon, streaky	do.	.22	.18-.20	.22-.24	.18-.19
Eggs	1 dozen	\$0.21-.27	.21	.19-.21	.19-.21
Cheese:					
Dutch	1 pound				
Limburg	do.	.11-.13	.11	.11	.11-.13
Swiss	do.	.24-.26	.22-.26	.22-.26	.22
Butter	do.	.29	.26-.29	.26-.29	.29
Margarin	do.	.16-.18	.16	.17	.18
Potatoes	7 pounds	.05-.06	.04-.06	.04	.04
Flour, wheat	do.	.22-.25	.31	.31	.28
Flour, rye	do.	.20			
Bread, gray	4 pounds	.09-.10	.13	.11-.13	.12
Bread, black	do.				.10
Milk	1 quart	.05-.06	.05	.05	.05
Coal	1 cwt	.21-.22	.30	.20-.33	.40-.42
Paraffin oil	1 gallon	.19	.22	.20	.20
Beef:					
Ribs	1 pound	.18	.16-.18	.18	.16-.18
Silverside	do.	.18-.20	.16-.18	.18	.16-.18
Shin, with bone	do.	.18	.16-.18	.18	.16-.17
Shin, without bone	do.	.20	.22	.22	
Steak	do.	.22	.20-.26	.33	.22-.26
Flank	do.	.16-.18	.16-.18	.18	.16-.17
Mutton:					
Leg	do.	.20	.15-.18	.17-.20	.16-.19
Shoulder	do.	.18-.20	.15-.16	.17-.19	.16-.19
Breast	do.	.16-.18	.12-.16	.17-.19	.16-.19
Neck	do.	.16	.12-.16	.17-.19	.16-.19
Chops, trimmed	do.	.20	.16-.18	.22	.22-.26
Pork:					
Leg	do.	.20	.19-.20	.20	
Foreloin	do.	.20	.18-.20		.19
Belly	do.	.18	.18-.20	.20	.19
Spare ribs	do.	.18	.18-.20	.20	.19
Chops	do.	.20-.22	.19-.20	.22-.24	.19
Veal:					
Hind quarter	do.	.18-.20	.16-.18	.17-.19	.17-.19
Shoulder, with bone	do.	.18	.16-.18	.17-.19	.17-.19
Shoulder, without bone	do.	.20		.26-.31	
Shin	do.	.18			
Loin	do.	.18-.20	.16-.18	.17-.19	.17-.19

In order to obtain an indication of the level of prices for each town as compared with other towns, index numbers have been constructed, the level of prices in Berlin being taken as the base (100). In the construction of the index numbers, in order to allow for the varying importance of the prices of different articles, as judged by the normal weekly expenditure of a working-class family, recourse was had to "weighting." For this purpose average quantities estimated from 5,046 family budgets giving weekly cost and quantity of certain articles of food consumed by workmen's families in German towns, in 1906-7, were utilized.

The following table groups these 5,046 families according to the aggregate weekly income of the family (not of the principal wage-earner only), and shows for each group the average family income and the average number of children at home for a representative week in 1906-7:

NUMBER AND AVERAGE INCOME OF URBAN WORKMEN'S FAMILIES REPORTING IN EACH CLASSIFIED INCOME GROUP AND AVERAGE NUMBER OF CHILDREN LIVING AT HOME, FOR A REPRESENTATIVE WEEK, 1906-7.

Classified weekly income.	Number of families reporting.	Average weekly family income from—			Total weekly family income.	Average number of children at home.
		Husband.	Wife.	Children.		
Under \$4.87.....	193	\$4.10	\$0.18	\$0.01	\$4.29	2.37
\$4.87 or under \$6.08.....	872	5.25	.23	.04	5.52	2.28
\$6.08 or under \$7.30.....	1,329	6.15	.34	.10	6.59	2.51
\$7.30 or under \$8.52.....	1,223	7.07	.47	.21	7.75	2.51
\$8.52 or under \$9.73.....	692	7.80	.65	.47	8.92	2.79
\$9.73 or over.....	737	8.08	.68	3.09	11.85	3.76

With regard to the statistics of families with the higher ranges of income it must be remembered that the amount of the family income is often due to the supplementary earnings of the wife or of children living at home, rather than to the high earnings of the head of the family. This is particularly the case where the income amounts to \$9.73 or more per week. As will be seen from the table, the average number of children living at home was, in the families of this class, higher than the average number for all the families from which budgets were obtained.

The tables following give the average expenditures for food of the 5,046 workmen's families to which the returns relate and the quantities consumed by them of the various articles of food in a representative week in 1906-7. All children living at home, irrespective of age, have been included, but returns in which lodgers appeared have been excluded.

**AVERAGE COST OF FOOD CONSUMED BY URBAN WORKMEN'S FAMILIES REPORTING
IN EACH CLASSIFIED INCOME GROUP FOR A REPRESENTATIVE WEEK, 1906-7.**

Items.	Average cost for families reporting weekly incomes of -					
	Under \$4.87.	\$4.87 or under \$6.08.	\$6.08 or under \$7.30.	\$7.30 or under \$8.52.	\$8.52 or under \$9.73.	\$9.73 or over.
Bread and flour.....	\$0.598	\$0.644	\$0.700	\$0.740	\$0.831	\$1.100
Meat (beef, pork, mutton, veal).....	.547	.573	.684	.821	.928	1.242
Sausage.....	.228	.280	.324	.365	.431	.598
Meat (other), including fish.....	.071	.081	.086	.096	.117	.147
Bacon.....	.106	.122	.132	.147	.162	.198
Eggs.....	.066	.122	.152	.172	.193	.243
Milk, fresh.....	.208	.280	.314	.340	.390	.431
Cheese.....	.066	.061	.076	.091	.106	.132
Butter.....	.162	.248	.319	.375	.411	.527
Margarin.....	.081	.101	.107	.112	.127	.152
Potatoes.....	.198	.203	.208	.213	.238	.294
Other vegetables and fruit.....	.066	.122	.162	.188	.208	.260
Rice, barley, and oatmeal.....	.035	.061	.066	.056	.061	.071
Macaroni.....	.010	.020	.030	.030	.036	.046
Coffee.....	.117	.142	.157	.172	.193	.248
Sugar.....	.086	.091	.090	.102	.106	.132
Cocoa and chocolate.....	.005	.020	.036	.041	.046	.056
Syrups.....	.015	.015	.015	.015	.015	.020
Salt and condiments.....	.031	.046	.051	.056	.061	.066
Lard, suet, and dripping.....	.182	.157	.157	.162	.182	.223
Other items of food.....	.041	.081	.107	.102	.122	.152
Meals away from home.....	.061	.101	.132	.162	.182	.314
Beer.....	.041	.116	.167	.218	.253	.324
Total.....	2.991	3.675	4.268	4.806	5.399	6.985

**AVERAGE QUANTITY OF FOOD CONSUMED BY URBAN WORKMEN'S FAMILIES
REPORTING IN EACH CLASSIFIED INCOME GROUP FOR A REPRESENTATIVE
WEEK, 1906-7.**

Items.	Average quantity consumed by families reporting weekly incomes of—					
	Under \$4.87.	\$4.87 or under \$6.08.	\$6.08 or under \$7.30.	\$7.30 or under \$8.52.	\$8.52 or under \$9.73.	\$9.73 or over.
Bread and flour.....pounds..	21.99	23.33	25.05	26.06	29.83	38.21
Meat (beef, pork, mutton, veal).....do....	3.14	3.30	3.83	4.54	5.19	6.85
Sausage.....do.....	1.25	1.55	1.68	2.07	2.20	2.92
Bacon.....do.....	.55	.70	.70	.75	.84	1.01
Milk, fresh.....pints..	8.76	11.09	12.30	12.83	14.45	16.10
Eggs.....number..	4.20	7.40	9.20	10.20	11.60	14.40
Cheese.....pounds..	.35	.42	.46	.62	.60	.77
Butter.....do.....	.55	.90	1.12	1.37	1.48	1.87
Potatoes.....do.....	28.13	25.57	23.96	23.81	24.63	33.55
Coffee.....do.....	.49	.64	.73	.77	.86	1.12
Sugar.....do.....	1.81	1.83	1.96	1.96	2.14	2.67

The proportion of the weekly income spent on food by the families of German urban workmen is brought out in the statement following:

**PROPORTION OF WEEKLY INCOME SPENT ON FOOD BY URBAN WORKMEN'S
FAMILIES.**

Items.	Percentage of income spent on food by families reporting weekly incomes of—					
	Under \$4.87.	\$4.87 or under \$6.08.	\$6.08 or under \$7.30.	\$7.30 or under \$8.52.	\$8.52 or under \$9.73.	\$9.73 or over.
All food (excluding beer).....	68.7	64.5	62.3	56.2	57.7	56.3
Meat (including bacon and fish).....	22.2	19.3	18.6	18.8	18.4	18.4

From the average quantity of food consumed weekly by workmen's families, on the basis of 5,046 family budgets, and from information obtained from other sources, the following are the quantities of the selected commodities assumed to be consumed by a German working-class family in a normal week:

Coffee.....	pound..	$\frac{1}{2}$	Flour, wheat.....	pounds..	2
Sugar, granulated.....	pounds..	2	Bread.....	do.....	25
Bacon.....	pound..	$\frac{1}{2}$	Milk.....	quarts..	6 $\frac{1}{2}$
Cheese.....	do.....	$\frac{1}{2}$	Beef.....	pounds..	2 $\frac{1}{2}$
Butter.....	pounds..	1 $\frac{1}{2}$	Pork.....	do.....	1 $\frac{1}{2}$
Eggs.....	number..	10	Coal.....	hundredweight..	1 $\frac{1}{2}$
Potatoes.....	pounds..	26			

The predominant prices in each town, as ascertained for the various articles, are weighted in accordance with the above quantities, the total expenditure so obtained being expressed as a percentage of the corresponding total as compiled from prices in Berlin. The following table shows, in descending order, the price index numbers thus constructed for the various towns:

RELATIVE LEVEL OF PRICES IN SPECIFIED GERMAN TOWNS AS COMPARED WITH BERLIN.

Town.	Index number.	Town.	Index number.	Town.	Index number.
Barmen.....	110	Dusseldorf.....	102	Essen.....	94
Mannheim.....	109	Eiberfeld.....	102	Zwickau.....	94
Mülhausen.....	109	Plauen.....	102	Oschersleben.....	94
Stuttgart.....	108	Königsberg.....	101	Stassfurt.....	94
Munich.....	107	Brunswick.....	101	Magdeburg.....	94
Nuremberg.....	107	Solingen.....	101	Hamburg-Altona.....	97
Remscheid.....	105	Aschaffenburg.....	101	Danzig.....	97
Bremen.....	105	Leipzig.....	101	Bochum.....	94
Chemnitz.....	105	Crefeld.....	100	Dortmund.....	94
Dresden.....	103	Berlin.....	100	Breslau.....	94
Aix-la-Chapelle.....	103	Stettin.....	99	Königshütte.....	84

From the foregoing it is seen that there are no less than 19 out of the 33 towns which have a prices index number higher than Berlin. The total difference between the highest and the lowest towns is 24 points, as contrasted with 72 points in the case of rents. However, if Königshütte (whose index number for prices is low) be excluded, the maximum difference in price levels is only 15 points.

RENTS AND PRICES COMBINED.

The presentation following gives the index numbers for each of the 33 specified towns in Germany for that portion of the cost of living which is due to expenditure on food and fuel and on housing accommodation. As the amount which has to be expended on food, etc., is considerably greater than that which has to be spent on rent, a weight of 4 has been given to prices and a weight of 1 to rent.

RELATIVE LEVEL OF RENT AND PRICES COMBINED IN 33 SPECIFIED TOWNS OF GERMANY.

Town.	Index number.	Town.	Index number.	Town.	Index number.
Stuttgart.....	106	Dresden.....	93	Dortmund.....	90
Mannheim.....	100	Königsberg.....	93	Stettin.....	88
Berlin.....	100	Aix-la-Chapelle.....	93	Brunswick.....	88
Barmen.....	99	Elberfeld.....	93	Bochum.....	88
Munich.....	98	Solingen.....	93	Danzig.....	87
Düsseldorf.....	97	Chemnitz.....	92	Breslau.....	87
Mülhausen.....	97	Plauen.....	92	Magdeburg.....	86
Nuremberg.....	96	Essen.....	92	Zwickau.....	86
Bemscheid.....	95	Leipzig.....	91	Stassfurt.....	85
Bremen.....	94	Hamburg-Altona.....	91	Oschersleben.....	84
Aschaffenburg.....	94	Crefeld.....	90	Königshütte.....	78

THE GERMAN EMPIRE AND GREAT BRITAIN COMPARED.

The difficulties in the way of any complete comparison of the relative prices ruling for similar commodities in England and in Germany, so far as they affect the expenditure of the working classes of the two countries, are sufficiently obvious from what has been said respecting the diversity of national habits and tastes. Neglecting, however, such differences, the predominant prices paid by the working classes of the two countries for commodities quoted in both were as follows:

RETAIL PRICES OF COMMODITIES IN TOWNS OF ENGLAND AND WALES AND OF GERMANY, IN OCTOBER, 1905, COMPARED.

Commodity.	Unit.	Predominant retail prices, October, 1905.		Ratio of mean predominant price in Ger- many to mean predominant price in England, taken as 100.
		England and Wales.	Germany.	
Sugar, granulated.....	1 pound..	\$0. 04	\$0. 04½-\$0. 05	119
Butter.....	do.....	. 27	. 26 - . 30	105
Potatoes.....	7 pounds..	\$0. 05- . 07	. 04½- . 06	88
Flour.....	do.....	. 16- . 20	. 23 - . 28	140
Milk.....	1 quart..	. 06- . 08	. 05 - . 05½	75
Beef.....	1 pound..	a. 15- . 17 b. 10- . 12	. 16 - . 18	122
Mutton.....	do.....	a. 15- . 18 b. 08- . 10	. 16 - . 20	137
Pork.....	do.....	. 15- . 17	. 18 - . 22	123
Bacon.....	do.....	. 14- . 18	. 18 - . 22	123
Coal.....	1 cwt.....	. 19- . 24	. 22 - . 32	124
Paraffin oil.....	1 gallon..	. 14- . 16	. 19 - . 22	135

a British or home killed.

b Foreign or colonial.

The arithmetic mean of the above numbers may be taken as a rough index to the relative price levels of the two countries, for commodities common to both, and is found to be 117 for Germany as compared with 100 for England.

It does not follow, however, that this ratio fairly represents the relative prices paid in the two countries for the necessities of existence. In the United Kingdom report the price levels of different towns were compared by the amount required to purchase the groceries, meat, and coal in an approximate average workingman's budget. In order to furnish a similar comparison in the present case the following table is given showing relatively how much the average British workingman would have to pay if he went to live in Germany and purchased the same kinds of food in the same quantities as he had previously used in England. The table shows that his expenditure would be increased in the ratio of 100 to 118.

COST OF THE AVERAGE BRITISH WORKINGMAN'S WEEKLY BUDGET (EXCLUDING TEA AND COFFEE) AT THE PREDOMINANT PRICES PAID BY THE WORKING CLASSES OF ENGLAND AND WALES AND OF GERMANY, IN OCTOBER, 1905.

Article.	Quantity in average British budget.	Predominant prices in October, 1905, in—		Cost of quantity in British budget in—	
		England and Wales.	Germany.	England and Wales.	Germany.
Sugar.....	5½ pounds.....	\$0.041 per pound.....	\$0.046 to \$0.051 per pound.....	\$0.218	\$0.259
Bacon.....	1½ pounds.....	\$0.142 to \$0.183 per pound.....	\$0.177 to \$0.223 per pound.....	.243	.299
Cheese.....	¾ pound.....	\$0.142 per pound.....	\$0.101 to \$0.132 per pound.....	.107	.086
Butter.....	2 pounds.....	\$0.269 per pound.....	\$0.264 to \$0.299 per pound.....	.537	.563
Potatoes.....	17 pounds.....	\$0.051 to \$0.071 per 7 pounds.....	\$0.046 to \$0.061 per 7 pounds.....	.147	.127
Flour (wheat).....	10 pounds.....	\$0.162 to \$0.203 per 7 pounds.....	\$0.233 to \$0.279 per 7 pounds.....	.259	.365
Bread (wheat, in England).....	22 pounds.....	\$0.091 to \$0.112 per 4 pounds.....		.558	
Equivalent wheat flour in Germany.....	22 pounds.....		\$0.233 to \$0.279 per 7 pounds.....		.806
Milk.....	5 quarts.....	\$0.061 to \$0.081 per quart.....	\$0.051 to \$0.056 per quart.....	.355	.269
Beef.....	4½ pounds.....	\$0.137 per pound.....	\$0.157 to \$0.177 per pound.....	.619	.750
Pork.....	¾ pound.....	\$0.152 to \$0.172 per pound.....	\$0.177 to \$0.223 per pound.....	.081	.101
Mutton.....	1½ pounds.....	\$0.129 per pound.....	\$0.157 to \$0.198 per pound.....	.193	.269
Coal.....	2 cwt.....	\$0.193 to \$0.243 per cwt.....	\$0.218 to \$0.324 per cwt.....	.436	.543
Total.....				3.753	4.437
Index number.....				100	118

On the other hand, the German workingman going to live in England would not reduce his expenditures for food in as high a ratio as 118 to 100, for his purchases as shown in the following table are entirely different in quantity from the British workingman's, and in some cases, notably potatoes and milk, he buys more of articles which are dearer in England and Wales than in Germany. The table shows that his expenditure would be decreased in the ratio of 108 to 100.

COST OF THE AVERAGE GERMAN WORKINGMAN'S WEEKLY BUDGET (EXCLUDING TEA AND COFFEE) AT THE PREDOMINANT PRICES PAID BY THE WORKING CLASSES OF ENGLAND AND WALES AND OF GERMANY, IN OCTOBER, 1906.

Article.	Quantity in average German budget.	Predominant prices in October, 1906, in—		Cost of quantity in German budget in—	
		England and Wales.	Germany.	England and Wales.	Germany.
Sugar.....	2 pounds...	\$0.041 per pound.....	\$0.046 to \$0.051 per pound.	\$0.081	\$0.096
Bacon.....	½ pound....	\$0.142 to \$0.183 per pound.	\$0.177 to \$0.223 per pound.	.122	.152
Cheese.....	½ pound....	\$0.142 per pound.....	\$0.101 to \$0.132 per pound.	.071	.061
Butter.....	1½ pounds..	\$0.269 per pound.....	\$0.264 to \$0.299 per pound.	.335	.350
Potatoes.....	26 pounds..	\$0.051 to \$0.071 per 7 pounds.	\$0.046 to \$0.061 per 7 pounds.	.228	.198
Flour (wheat)....	2 pounds..	\$0.162 to \$0.208 per 7 pounds.	\$0.233 to \$0.279 per 7 pounds.	.051	.071
Bread (wheat, in England).	25 pounds..	\$0.091 to \$0.112 per 4 pounds.		.634	
Bread (wheat and rye in Germany).	25 pounds..		\$0.096 to \$0.132 per 4 pounds.		.715
Milk.....	6½ quarts..	\$0.061 to \$0.061 per quart.	\$0.051 to \$0.066 per quart.	.461	.345
Beef.....	2½ pounds..	\$0.137 per pound.....	\$0.157 to \$0.177 per pound.	.299	.370
Pork.....	1½ pounds..	\$0.152 to \$0.172 per pound.	\$0.177 to \$0.223 per pound.	.259	.319
Coal.....	1½ cwt.....	\$0.193 to \$0.243 per cwt..	\$0.218 to \$0.324 per cwt..	.324	.406
Total.....				2.865	3.083
Index number..				100	108

The differences in the amounts consumed and the sums spent for the chief commodities by workingmen's families receiving certain specified weekly incomes are brought out in the two following statements:

RATIOS OF THE QUANTITIES OF CERTAIN ARTICLES OF FOOD CONSUMED BY WORKMEN'S FAMILIES IN GERMANY, RECEIVING SPECIFIED WEEKLY INCOMES, TO THE QUANTITIES OF THE SAME ARTICLES CONSUMED BY WORKMEN'S FAMILIES IN GREAT BRITAIN WITH CORRESPONDING INCOMES.

[Quantities in Great Britain=100.]

Items.	Families receiving weekly incomes of—		
	\$6.08 or under \$7.30.	\$7.30 or under \$8.52.	\$8.52 or under \$9.73.
Bread and flour.....	84	89	99
Meat and fish.....	88	90	95
Eggs.....	106	90	97
Milk, fresh.....	159	130	140
Cheese.....	66	78	78
Butter, margarin, lard, etc.....	113	115	120
Potatoes.....	151	148	155
Sugar.....	42	41	41

RATIOS OF THE AMOUNTS SPENT ON CERTAIN ARTICLES OF FOOD CONSUMED BY WORKMEN'S FAMILIES IN GERMANY, RECEIVING SPECIFIED WEEKLY INCOMES, TO THE AMOUNTS SPENT ON THE SAME ARTICLES BY WORKMEN'S FAMILIES IN GREAT BRITAIN WITH CORRESPONDING INCOMES.

[Expenditure in Great Britain=100.]

Items.	Families receiving weekly incomes of—		
	\$6.08 or under \$7.30.	\$7.30 or under \$8.52.	\$8.52 or under \$9.73.
Bread and flour.....	87	92	102
Meat and fish.....	103	100	106
Eggs.....	88	77	79
Milk, fresh.....	132	110	118
Cheese.....	68	75	88
Butter, margarin, lard, etc.....	115	112	117
Potatoes.....	105	100	115
Vegetables and fruit.....	114	93	87
Farinaceous foods (other than bread and flour).....	85	71	83
Tea, coffee, cocoa, etc.....	66	65	67
Sugar.....	47	47	47

RATES OF WAGES.

THE GERMAN EMPIRE.

An inquiry into the rates of wages prevailing in October, 1905, in the various towns canvassed was made as complementary to the one into rents and prices. In order to facilitate comparison, four industries were selected which were represented in all the towns with few exceptions, and in which the standard rates of wages could be ascertained with accuracy. These industries were the building trades, engineering, printing, and municipal employment; and the rates in Berlin were again taken as the base for the index numbers. The rates referred to are in all cases weekly rates.

The following table, which is exclusive of Berlin, shows the predominant range of weekly wages for each of the occupations in the selected standard industries in towns of Germany:

RATES OF WAGES IN TOWNS OF GERMANY, OCTOBER, 1905.

Industry and occupation.	Number of towns included.	Predominant range of weekly wages, October, 1905.	Number of towns in which the mean wage for the given occupation was—		
			Within the predominant range.	Below the predominant range.	Above the predominant range.
BUILDING TRADES.					
Bricklayers and masons.....	32	\$6.55- \$7.60	19	7	6
Carpenters.....	32	6.55- 7.00	16	8	8
Joiners and cabinetmakers.....	30	5.84- 6.57	16	7	7
Plumbers.....	28	5.84- 6.93	20	4	4
Stucco workers.....	26	8.03- 8.76	13	8	5
Painters.....	29	5.84- 7.22	25	1	3
Laborers.....	32	4.74- 5.84	18	7	7
ENGINEERING TRADES.					
Molders.....	21	7.30- 8.27	10	6	5
Fitters.....	28	6.33- 7.79	18	6	4
Turners.....	28	6.57- 8.03	17	6	5
Smiths.....	23	6.93- 8.03	12	6	5
Pattern makers.....	28	6.20- 7.30	15	6	7
Laborers.....	28	4.38- 5.35	22	3	3

RATES OF WAGES IN TOWNS OF GERMANY, OCTOBER, 1906—Concluded.

Industry and occupation.	Number of towns included.	Predominant range of weekly wages, October, 1906.	Number of towns in which the mean wage for the given occupation was—		
			Within the predominant range.	Below the predominant range.	Above the predominant range.
PRINTING TRADE.					
Compositors, machine tenders, and pressmen.....	32	\$6.02-\$6.31	21	6	5
MUNICIPAL EMPLOYMENT.					
Road makers.....	30	4.28- 5.25	18	6	6
Road sweepers.....	26	4.18- 5.11	18	4	4
Gas stokers.....	29	5.84- 7.30	22	3	4
Gas laborers.....	29	4.38- 5.47	23	3	3
Waterworks laborers.....	29	4.38- 5.25	16	6	7

In the following table is shown the predominant rate of weekly wages for skilled men for each of the specified occupations in the building, engineering, and printing trades in 12 towns of Germany, selected as to certain geographical districts:

RATES OF WEEKLY WAGES IN 12 SELECTED TOWNS OF GERMANY, OCTOBER, 1906.

Industry and occupation.	Berlin.	Breslau.	Danzig.	Dresden.	Dusseldorf.	Essen.
BUILDING TRADES.						
Bricklayers and masons.....	\$9.51	\$7.30	\$7.02	\$7.20	\$7.89	\$7.60
Carpenters.....	9.51	7.30	6.71	7.20	8.31	7.32
Joiners and cabinetmakers.....	7.77	5.58	.....	7.20	6.71	6.57
Plumbers.....	7.81	6.57	5.56	\$6.57-6.81	5.84	\$5.78-6.29
Stucco workers.....	10.22	6.57	.....	7.58	8.76	8.02
Painters.....	7.16	5.84	.....	6.09	6.57	6.71-7.02
ENGINEERING TRADES.						
Molders.....	\$8.27-9.45	.....	.....	7.30-8.52	9.00	8.76-9.98
Fitters.....	7.30-8.03	7.60	\$5.11-5.43	6.08-6.57	\$7.30-8.52	7.30-9.49
Turners.....	9.06-9.45	8.27	5.43	6.57-7.30	8.03-8.76	7.91-9.49
Smiths.....	7.30-7.58	8.03	5.43-5.56	.....	8.03-8.76	7.30-8.76
Pattern makers.....	8.76-9.00	7.30	5.72-6.08	6.57-7.30	7.30-8.03	6.57
PRINTING TRADE.						
Hand compositors, machine tenders, and pressmen.....	6.85	6.31	6.02	6.43	6.16	6.31
Machine compositors:						
News.....	8.56	7.87	7.52	8.05	7.71	7.87
Job.....	8.90	8.19	7.83	8.35	7.81	8.19
Industry and occupation.	Hamburg-Altona.	Leipzig.	Magdeburg.	Munich.	Nuremberg.	Stuttgart.
BUILDING TRADES.						
Bricklayers and masons.....	\$9.77	\$7.89	\$7.22	\$7.58	\$6.93	\$6.61
Carpenters.....	9.77	7.89	7.22	7.16	6.93	6.61
Joiners and cabinetmakers.....	7.10	7.75	6.20	6.57	5.78	5.45
Plumbers.....	7.81	6.57	.....	7.22	6.12	6.12
Stucco workers.....	\$10.22-11.68	.....	.....	9.43	\$7.48-9.02	7.30
Painters.....	7.89	7.18	6.57	6.92	6.31	\$6.31-6.57
ENGINEERING TRADES.						
Molders.....	6.57-7.30	.....	\$8.27-9.00	\$6.08-7.30	7.48	8.76
Fitters.....	7.30-8.76	\$7.30-8.08	6.57-8.03	5.84-6.81	6.08-7.91	5.96-6.81
Turners.....	7.30-8.76	7.79-8.08	7.30-8.76	6.33-7.30	6.81-8.46	6.57-6.81
Smiths.....	7.30-8.76	8.03-8.52	7.30-8.03	.....	.....	7.89
Pattern makers.....	7.30-8.76	6.57-8.27	6.57-7.54	6.81-7.79	5.92-6.81	6.33-7.06
PRINTING TRADE.						
Hand compositors, machine tenders, and pressmen.....	6.85	6.57	6.02	6.43	6.31	6.43
Machine compositors:						
News.....	8.56	8.21	7.52	8.05	7.87	8.05
Job.....	8.90	8.54	7.83	8.35	8.19	8.35

In the table following index numbers are given comparing (with Berlin as the base = 100) the weekly rates of wages of workmen in the four specified industries in the different towns of Germany, the towns being arranged in seven geographical groups:

RELATIVE LEVEL OF WEEKLY WAGES IN GERMAN TOWNS AS COMPARED WITH BERLIN.

Geographical groups.	Building.		Engineering.		Print- ing.	Municipal employ- ees.
	Skilled men.	Labor- ers.	Skilled men.	Labor- ers.	Skilled men.	
Berlin	100	100	100	100	100	100
Central Germany:						
Magdeburg	81	89	90	99	88	88
Brunswick	89	89	91	89	92	92
Stassfurt	71	76	80	91	80	81
Oschersleben	91	67	83	89	80	65
Rhineland Westphalia (textile towns):						
Elberfeld	89	94			88	85
Barmen	82	89	91	96	88	80
Aix-la-Chapelle	79	70	96	87	88	89
Crefeld	78	85	90	101	88	84
Rhineland Westphalia (hardware towns):						
Düsseldorf	85	103	98	103	90	93
Essen	83	99	99	99	92	87
Dortmund	84	101	90	99	90	90
Bochum	83	96	87	96	88	87
Remscheid	83	85	97	108	88	91
Solingen	87	103	88	89	88	89
South Germany:						
Munich	85	89	83	89	94	91
Nuremberg	78	73	88	85	92	86
Stuttgart	75	81	84	83	94	87
Mannheim	81	89	96	101	90	91
Mülhausen	69	76	67	81	80	81
Aschaffenburg	71	76	65	83	80	72
Saxony:						
Dresden	83	90	83	106	94	90
Leipzig	88	95	95	96	96	89
Chemnitz	78	80	73	71	90	87
Plauen	81	77			88	76
Zwickau	68	66	65	78	86	69
Silesia:						
Breslau	76	78	95	88	92	81
Königshütte	65	58			84	72
Baltic ports:						
Stettin	79	67	71	83	90	78
Königsberg	80	90			88	76
Danzig	74	72	67	85	88	78
North Sea ports:						
Hamburg-Altona	102	125	97	96	100	93
Bremen	89	100	79	89	92	101

RELATION OF RATES OF WAGES TO RENTS AND PRICES.

The presentation which follows shows for each of the geographical groups of Germany the mean index numbers for rent and prices and rent and prices combined, together with the mean index numbers for the weekly rates of wages of skilled men in the building, engineering, and printing industries. Berlin has been taken as the base (100) in each case. In the construction of the index numbers for rent and prices combined, prices have been given a weight of 4 and rent a weight of 1.

RELATIVE LEVEL OF RENT AND PRICES, OF RENT AND PRICES COMBINED, AND OF WEEKLY WAGES OF SKILLED MEN IN 7 GEOGRAPHICAL GROUPS OF GERMANY AS COMPARED WITH BERLIN.

Geographical groups.	Number of towns included.	Mean index numbers.					
		Rent and prices.			Wages (skilled men).		
		Rent.	Prices.	Rent and prices combined.	Building.	Engineering.	Printing.
Berlin.....		100	100	100	100	100	100
Central Germany.....	4	35	90	86	83	86	85
Rhineland Westphalia:							
Textile towns.....	4	55	104	94	82	92	88
Hardware towns.....	6	64	100	93	84	93	89
South Germany.....	6	65	107	90	77	81	88
Saxony.....	5	47	102	91	80	79	91
Silesia.....	2	52	91	83	71	95	88
Baltic ports.....	3	52	90	89	78	69	89
North Sea ports.....	2	59	101	93	96	88	96

* The number of towns represented in the construction of this index number is less than the total number included within the geographical group.

If the mean of the wages index numbers in each group for the three industries (building, engineering, and printing) be taken, and the means so obtained divided by the index numbers for rent and prices combined, a comparison of the average level of "real" wages in the selected occupations may be made, viz, the money wages expressed in terms of their purchasing capacity (as shown in the index numbers of rent and prices combined). The results are shown in the table which follows:

AVERAGE LEVEL OF "REAL" WAGES AND LEVEL OF RENT AND PRICES COMBINED IN 7 GEOGRAPHICAL GROUPS OF GERMANY, AS COMPARED WITH BERLIN.

Geographical groups.	Number of towns included.	Mean index numbers.		
		Rent and prices combined.	Wages of skilled men in building, engineering, and printing trades.	Approximate relative level of "real" wages.
Berlin.....		100	100	100
Central Germany.....	4	86	85	99
Rhineland Westphalia:				
Textile towns.....	4	94	87	93
Hardware towns.....	6	93	89	96
South Germany.....	6	99	82	83
Saxony.....	5	91	83	91
Silesia.....	2	83	85	102
Baltic ports.....	3	89	79	89
North Sea ports.....	2	93	93	100

THE GERMAN EMPIRE AND GREAT BRITAIN COMPARED.

The predominant rates of weekly wages paid in the building, engineering, and printing trades of Germany (industries which were found in all the towns investigated) are here brought into contrast with the rates of weekly wages paid in similar trades in Great Britain.

RATES OF WAGES IN TOWNS OF ENGLAND AND WALES AND OF GERMANY, IN
OCTOBER, 1905, COMPARED.

Industry and occupation.	Predominant range of weekly wages, October, 1905.		Ratio of mean predominant wage in Germany to mean predominant wage in England, taken as 100.
	England and Wales.	Germany.	
BUILDING TRADES.			
Bricklayers.....	\$9.12-\$9.85	\$6.55-\$7.60	75
Masons.....	9.04-9.57		
Carpenters.....	8.80-9.57		
Plumbers.....	8.60-9.67		
Painters.....	7.66-9.12		
Laborers.....	5.72-6.57	4.74-5.84	86
ENGINEERING TRADES.			
Fitters.....	7.79-8.76	6.33-7.79	85
Turners.....	7.79-8.76	6.57-8.03	88
Smiths.....	7.79-8.76	6.93-8.03	90
Pattern makers.....	8.27-9.25	6.20-7.30	77
Laborers.....	4.38-5.35	4.38-5.35	100
PRINTING TRADE.			
Compositors.....	6.81-8.03	6.02-6.31	83
Arithmetic mean of ratios for all trades			83

In the case of the building trades the weekly wages given are, for both countries, the wages for a full working week in summer. In the case of the engineering trades, the English wages are the standard time rates recognized by the unions concerned; the German rates, on the other hand, are in most cases based on returns of actual earnings, and it is consequently doubtful how far the two sets of returns are strictly comparable. The standard time rates being often exceeded by actual earnings on piecework, it is probable that the German rates appear somewhat too high relatively to the English. The compositors' rates in both England and Germany are standard rates.

For skilled men in the building trades the German wages are about 75 per cent of the English; for skilled men in the engineering trades about 85 per cent of the English, and for compositors (hand) in the printing trade about 83 per cent of the English. Laborers in the building trades in Germany earn about 86 per cent of the weekly earnings of the corresponding class in England, while German laborers in the engineering trades have weekly earnings equal to those of the English. The arithmetic mean of the ratios for all trades shown in the table indicates that the mean predominant wage in Germany is approximately 83 per cent of that in England and Wales.

As most of the data for Germany are based on the gross earnings, before the compulsory deductions on account of insurance have been made, it might at first sight appear that account should be taken of such deductions. In point of fact, however, the deductions from the German workman's wages for insurance correspond in part to the pay-

ments of the British workman to his friendly society or sick club for similar benefits, and only differ from these in the former being compulsory. Therefore, there does not seem to be any reason for making a deduction from the predominant German wage rates to make them comparable with the English.

HOURS OF LABOR.

In the table following is presented for the building, engineering, and printing trades a comparison of the average usual hours of labor per week in England and Wales with corresponding data for Germany:

AVERAGE USUAL HOURS OF LABOR PER WEEK IN ENGLAND AND WALES AND IN GERMANY COMPARED.

Industry and occupation.	Average usual hours of labor per week in—		Ratio of average hours of labor in Germany to those in England, taken as 100.
	England and Wales.	Germany.	
BUILDING TRADES.			
Bricklayers and masons.....	52½	59	112
Carpenters.....	53	59	111
Plumbers.....	53½	58	108
Painters.....	53½	59	110
Laborers.....	52½	59	112
ENGINEERING TRADES.			
Fitters.....	53	59½	112
Turners.....	53	59½	112
Smiths.....	53	59½	112
Pattern makers.....	53	59½	112
Laborers.....	53	59½	112
PRINTING TRADE.			
Compositors.....	52½	54	103
Arithmetic mean of ratios for all trades.....			111

It will be seen from the foregoing, except in the case of the printing trade, which is a highly organized one in Germany, and for which the working hours have been fixed by agreement at the relatively low level of 54 per week, the hours of labor in Germany are from 8 to 12 per cent higher than in England; or, on the average of the above trades, hours in Germany exceed those in England by rather more than 10 per cent.

SUMMARY OF CONCLUSIONS.

A summary of the conclusions derived from the investigation follows:

Rents.—Net rents of working-class dwellings in Germany are to gross rents (including rates) of working-class dwellings in England as 101 to 100.

Net rents of working-class dwellings in Germany are to net rents of working-class dwellings in England (excluding that portion of English rents representing local taxation) as 123 to 100.

Retail prices.—On the basis of the ordinary English standard of consumption the expenditure of the workman on food and fuel in Germany is to his expenditure in England as 118 to 100.

If the expenditure on rent be combined with that on food and fuel (the expenditure on the latter items being taken at four times the former) the results are:

The expenditure on food, fuel, and rent of the workman in Germany, on the same basis as above, would be to that of the same workman in England, on the same items but including local taxation, as 115 to 100.

The expenditure on food, fuel, and rent of the workman in Germany would be to that of the same workman in England, on the same items, exclusive of local taxation, as 119 to 100.

It appears, therefore, that an English workman in Germany, and living as far as possible as he had been accustomed to live in England, would find his expenditure on rent (exclusive of local taxation), food, and fuel increased by some 19 per cent (or roughly by one-fifth).

Wages and hours of labor.—Weekly money wages of the working classes in German towns are to weekly wages of the same classes in England, in the trades selected for comparison, as 83 to 100.

Average usual working hours per week of the working classes in German towns are to those of the same classes in England, in the trades selected for comparison, as 111 to 100.

Consequently the hourly rates of money wages for the working classes in German towns are to those of the same classes in England, for the trades selected for comparison, as 75 to 100.

Thus on the above basis the German rate of money wages per hour is about three-fourths of the English rate, and the cost of rent, food, and fuel nearly one-fifth greater than in England.

CHANGES IN RETAIL PRICES AND RATES OF WAGES BETWEEN OCTOBER, 1905, AND MARCH, 1908.

It will be remembered that the returns upon which the index numbers referred to in the foregoing sections are based related to October, 1905, and it will be of interest to note what changes have occurred since that date. For this purpose supplementary investigations were made, in April, 1908, in regard to the movement of prices in six representative towns (Berlin, Aix-la-Chapelle, Chemnitz, Magdeburg, Mannheim, and Mülhausen) with a total population of about 3,000,000. Information was also obtained, so far as possible, in regard to the movement of wages during the same period.

The upward movement in the price of bread which set in during 1905 continued, with a certain break toward the end of 1906, until the beginning of 1908, since when there has been a slight fall in price in some of the towns. The following table summarizes in English

units the prices of rye bread of various grades in October, 1905, and in February or March, 1908, for the six representative towns:

PRICE OF RYE BREAD IN SIX REPRESENTATIVE GERMAN TOWNS. OCTOBER, 1905, AND FEBRUARY OR MARCH, 1908.

Town.	Price of rye bread per 4 pounds.		Per cent of increase.
	October, 1905.	February or March, 1908.	
Aix-la-Chapelle.....	\$0.086	\$0.107	24
Berlin.....	.112	.152	36
Chemnitz.....	.086	.127	32
Magdeburg.....	.101	.127	25
Mannheim.....	.107	.122	14
Mülhausen.....	.101	.112	10

The rise in price thus ranges from 10 to 36 per cent, or an average advance of 23 per cent since October, 1905.

Since October, 1905, in the six towns under consideration, the movements in the prices of beef were comparatively small and very irregular. On the whole the highest level was reached toward the end of 1906, since which time, in spite of marked fluctuations in some cases, prices generally have tended downward. In the case of pork, on the other hand, there has been a considerable fall in prices, the greater part of this having taken place since the autumn of 1906. The average fall has been 15 per cent. Comparatively little information was obtained in regard to the movement in the prices of groceries. So far as it was possible to judge from the few returns obtained, prices appear to have undergone little change.

There has been on the whole a marked upward movement in the predominant weekly rates of wages or earnings between October, 1905, and March, 1908—a period of great industrial activity and expansion in all the towns and in all the industries investigated.

The following table shows the percentage changes in the predominant weekly earnings in various occupations of the engineering trades in five towns between October, 1905, and March, 1908:

PER CENT OF INCREASES IN PREDOMINANT WEEKLY WAGES IN THE ENGINEERING TRADES IN FIVE TOWNS BETWEEN OCTOBER, 1905, AND MARCH, 1908.

Occupation.	Berlin.	Chemnitz.	Magdeburg.	Mannheim.	Mülhausen.	Average.
Molders.....	5.4	2.8	13.7	14.9	9.1	9.2
Fitters.....	7.0	2.8	13.1	13.4	7.0	8.8
Turners.....	4.5	2.8	11.5	15.0	7.1	8.2
Smiths.....	5.9	2.7	11.6	18.0	4.6	8.6
Pattern makers.....	1.4	2.7	12.5	14.8	5.5	7.4
Laborers.....	8.0	3.0	11.0	6.4	5.2	6.7

In the building trades the general movement has likewise been upward, as is shown by the following table, which gives the percentage changes for certain occupations of the industry in five towns between October, 1905, and March, 1908:

PER CENT OF INCREASES IN PREDOMINANT WEEKLY WAGES IN THE BUILDING TRADES IN FIVE TOWNS BETWEEN OCTOBER, 1905, AND MARCH, 1908.

Occupation.	Aix-la-Chapelle.	Berlin.	Chemnitz.	Magdeburg.	Mannheim.	Average.
Bricklayers and masons.....	a 3.4	2.8	11.5	3.9	8.1	4.6
Carpenters.....	9.4	2.8	11.5	3.9	13.6	6.9
Painters.....	7.3	21.2	.....	3.6	.....	9.1
Laborers.....	13.0	2.7	17.1	7.3	.....	8.0

a Decrease.

In the printing trade the wages of both hand and machine compositors have been increased by the revised national agreement which came into force in January, 1907, and will remain in operation until December 31, 1911. The effect of the new agreement amounts (in the towns considered) to an increase of 11 per cent in the rates of wages.

Considering the rise in wages in certain occupations of the textile industries and in the wages of municipal employees, if the data for all the above-mentioned trades be taken together, an estimate of a rise of 8 or 9 per cent in the general level of weekly wages and earnings between October, 1905, and March, 1908 (that is, in a period marked until near its close by great industrial activity), may be regarded as approximately accurate.

This rise in wages has been accompanied by some tendency to reduction of hours, especially where the normal hours previously exceeded 57 to 60 per week. In the printing trade hours remained unchanged, having been fixed by agreement at the universal level of 54 per week.

BRITISH OLD AGE PENSIONS ACT OF 1908.

As the result of several years of effort and deliberation, Parliament at its late session passed an Old Age Pensions Act, the royal assent having been given August 1. A proposition to limit the operation of the law tentatively to a period of years was rejected, and it is fair to assume that the new principle involved is permanently incorporated into the administrative policy of Great Britain. The text in full is given below:

SUBJECT-MATTER OF SECTIONS.

- Section 1: General provision as to old age pensions.
- Section 2: Conditions under which pensions may be allowed.
- Section 3: Disqualifications.
- Section 4: Method of computing means or income of claimants.
- Section 5: Payment of pensions.
- Section 6: Pensions inalienable.
- Section 7: Determination of claims and questions.
- Section 8: Committees, officers, etc.
- Section 9: False statements, misrepresentations, etc.
- Section 10: Regulations made by whom; provision for expenses.
- Section 11: Application of act to Scotland, Ireland, and the Scilly Islands.
- Section 12: Date when act takes effect.
- Schedule: Weekly rates of payment.

AN ACT to provide for old age pensions. [1st August, 1908.]

*Be it enacted by * * * Parliament assembled, and by the authority of the same, as follows:*

1.—(1) Every person in whose case the conditions laid down by this act for the receipt of an old age pension (in this act referred to as statutory conditions) are fulfilled, shall be entitled to receive such a pension under this act so long as those conditions continue to be fulfilled, and so long as he is not disqualified under this act for the receipt of the pension.

(2) An old age pension under this act shall be at the rate set forth in the schedule to this act.

(3) The sums required for the payment of old age pensions under this act shall be paid out of moneys provided by Parliament.

(4) The receipt of an old age pension under this act shall not deprive the pensioner of any franchise, right, or privilege, or subject him to any disability.

2.—The statutory conditions for the receipt of an old age pension by any person are—

(1) The person must have attained the age of seventy;

(2) The person must satisfy the pension authorities that for at least twenty years up to the date of the receipt of any sum on account of a pension he has been a British subject, and has had his residence, as defined by regulations under this act, in the United Kingdom;

(3) The person must satisfy the pension authorities that his yearly means as calculated under this act do not exceed thirty-one pounds ten shillings [\$153.29].

3.—(1) A person shall be disqualified for receiving or continuing to receive an old age pension under this act, notwithstanding the fulfillment of the statutory conditions—

(a) While he is in receipt of any poor relief (other than relief excepted under this provision), and, until the thirty-first day of December nineteen hundred and ten unless Parliament otherwise determines, if he has at any time since the first day

January nineteen hundred and eight received, or hereafter receives, any such relief: *Provided* That for the purposes of this provision—

(i) any medical or surgical assistance (including food or comforts) supplied by or on the recommendation of a medical officer; or

(ii) any relief given to any person by means of the maintenance of any dependent of that person in any lunatic asylum, infirmary, or hospital, or the payment of any expenses of the burial of a dependent; or

(iii) any relief (other than medical or surgical assistance, or relief hereinbefore specifically exempted) which by law is expressly declared not to be a disqualification for registration as a parliamentary elector, or a reason for depriving any person of any franchise, right, or privilege;

shall not be considered as poor relief:

(b) If, before he becomes entitled to a pension, he has habitually failed to work according to his ability, opportunity, and need, for the maintenance or benefit of himself and those legally dependent upon him:

Provided That a person shall not be disqualified under this paragraph if he has continuously for ten years up to attaining the age of sixty, by means of payments to friendly, provident, or other societies, or trade unions, or other approved steps, made such provision against old age, sickness, infirmity, or want or loss of employment as may be recognized as proper provision for the purpose by regulations under this act, and any such provision, when made by the husband in the case of a married couple living together, shall as respects any right of the wife to a pension, be treated as provision made by the wife as well as by the husband:

(c) While he is detained in any asylum within the meaning of the Lunacy Act, 1890, or while he is being maintained in any place as a pauper or criminal lunatic:

(d) During the continuance of any period of disqualification arising or imposed in pursuance of this section in consequence of conviction for an offence.

(2) Where a person has been before the passing of this act, or is after the passing of this act, convicted of any offence, and ordered to be imprisoned without option of a fine or to suffer any greater punishment, he shall be disqualified for receiving or continuing to receive an old age pension under this act while he is detained in prison in consequence of the order, and for a further period of ten years after the date on which he is released from prison.

(3) Where a person of sixty years of age or upwards having been convicted before any court is liable to have a detention order made against him under the Inebriates Act, 1898, and is not necessarily, by virtue of the provisions of this act, disqualified for receiving or continuing to receive an old age pension under this act, the court may, if they think fit, order that the person convicted be so disqualified for such period, not exceeding ten years, as the court direct.

4.—(1) In calculating the means of a person for the purpose of this act account shall be taken of—

(a) the income which that person may reasonably expect to receive during the succeeding year in cash, excluding any sums receivable on account of an old age pension under this act, that income, in the absence of other means for ascertaining the income, being taken to be the income actually received during the preceding year;

(b) the yearly value of any advantage accruing to that person from the use or enjoyment of any property belonging to him which is personally used or enjoyed by him;

(c) the yearly income which might be expected to be derived from any property belonging to that person which, though capable of investment or profitable use, is not so invested or profitably used by him; and

(d) the yearly value of any benefit or privilege enjoyed by that person.

(2) In calculating the means of a person being one of a married couple living together in the same house, the means shall not in any case be taken to be a less amount than half the total means of the couple.

(3) If it appears that any person has directly or indirectly deprived himself of any income or property in order to qualify himself for the receipt of an old age pension, or for the receipt of an old age pension at a higher rate than that to which he would otherwise be entitled under this act, that income or the yearly value of that property shall, for the purposes of this section, be taken to be part of the means of that person.

5.—(1) An old age pension under this act, subject to any directions of the treasury in special cases, shall be paid weekly in advance in such manner and subject to such conditions as to identification or otherwise as the treasury direct.

(2) A pension shall commence to accrue on the first Friday after the claim for the pension has been allowed, or, in the case of a claim provisionally allowed, on the first Friday after the day on which the claimant becomes entitled to receive the pension.

6.—Every assignment of or charge on and every agreement to assign or charge an old age pension under this act shall be void, and, on the bankruptcy of a person enti-

tled to an old age pension, the pension shall not pass to any trustee or other person acting on behalf of the creditors.

7.—(1) All claims for old age pensions under this act and all questions whether the statutory conditions are fulfilled in the case of any person claiming such a pension, or whether those conditions continue to be fulfilled in the case of a person in receipt of such a pension, or whether a person is disqualified for receiving or continuing to receive a pension, shall be considered and determined as follows:

(a) Any such claim or question shall stand referred to the local pension committee, and the committee shall (except in the case of a question which has been originated by the pension officer and on which the committee have already received his report), before considering the claim or question, refer it for report and inquiry to the pension officer:

(b) The pension officer shall inquire into and report upon any claim or question so referred to him, and the local pension committee shall, on the receipt of the report of the pension officer and after obtaining from him or from any other source if necessary any further information as to the claim or question, consider the case and give their decision upon the claim or question;

(c) The pension officer, and any person aggrieved, may appeal to the central pension authority against a decision of the local pension committee allowing or refusing a claim for pension or determining any question referred to them within the time and in the manner prescribed by regulations under this act, and any claim or question in respect of which an appeal is so brought shall stand referred to the central pension authority, and shall be considered and determined by them:

(d) If any person is aggrieved by the refusal or neglect of a local pension committee to consider a claim for a pension, or to determine any question referred to them, that person may apply in the prescribed manner to the central pension authority, and that authority may, if they consider that the local pension committee have refused or neglected to consider and determine the claim or question within a reasonable time, themselves consider and determine the claim or question in the same manner as on an appeal from the decision of the local pension committee.

(2) The decision of the local pension committee on any claim or question which is not referred to the central pension authority, and the decision of the central pension authority on any claim or question which is so referred to them, shall be final and conclusive.

8.—(1) The local pension committee shall be a committee appointed for every borough and urban district, having a population according to the last published census for the time being of twenty thousand or over, and for every county (excluding the area of any such borough or district), by the counsel of the borough, district, or county.

The persons appointed to be members of a local pension committee need not be members of the council by which they are appointed.

(2) A local pension committee may appoint such and so many subcommittees, consisting either wholly or partly of the members of the committee as the committee think fit, and a local pension committee may delegate, either absolutely or under such conditions as they think fit, to any such subcommittee any powers and duties of the local pension committee under this act.

(3) The central pension authority shall be the Local Government Board, and the board may act through such committee, persons, or person appointed by them as they think fit.

(4) Pension officers shall be appointed by the treasury, and the treasury may appoint such number of those officers as they think fit to act for such areas as they direct.

(5) Any reference in this act to pension authorities shall be construed as a reference to the pension officer, the local pension committee, and the central pension authority, or to any one of them, as the case requires.

9.—(1) If for the purpose of obtaining or continuing an old age pension under this act, either for himself or for any other person, or for the purpose of obtaining or continuing an old age pension under this act for himself or for any other person at a higher rate than that appropriate to the case, any person knowingly makes any false statement or false representation, he shall be liable on summary conviction to imprisonment for a term not exceeding six months, with hard labor.

(2) If it is found at any time that a person has been in receipt of an old age pension under this act while the statutory conditions were not fulfilled in his case or while he was disqualified for receiving the pension, he or, in the case of his death, his personal representative, shall be liable to repay to the treasury any sums paid to him in respect of the pension while the statutory conditions were not fulfilled or while he was disqualified for receiving the pension, and the amount of those sums may be recovered as a debt due to the Crown.

10.—(1) The treasury in conjunction with the Local Government Board and with the postmaster-general (so far as relates to the post-office) may make regulations for carrying this act into effect, and in particular—

(a) for prescribing the evidence to be required as to the fulfillment of statutory conditions and for defining the meaning of residence for the purposes of this act; and

(b) for prescribing the manner in which claims to pensions may be made, and the procedure to be followed on the consideration and determination of claims and questions to be considered and determined by pension officers and local pension committees or by the central pension authority, and the mode in which any question may be raised as to the continuance, in the case of a pensioner, of the fulfillment of the statutory conditions, and as to the disqualification of a pensioner; and

(c) as to the number, quorum, term of office, and proceedings generally of the local pension committee and the use by the committee, with or without payment, of any offices of a local authority, and the provision to be made for the immediate payment of any expenses of the committee which are ultimately to be paid by the treasury.

(2) The regulations shall provide for enabling claimants for pensions to make their claims and obtain information as respects old age pensions under this act through the post-office, and for provisionally allowing claims to pensions before the date on which the claimant will become actually entitled to the pension, and for notice being given by registrars of births and deaths to the pension officers or local pension committees of every death of a person over seventy registered by them, in such manner and subject to such conditions as may be laid down by the regulations, and for making the procedure for considering and determining on any claim for a pension or question with respect to an old age pension under this act as simple as possible.

(3) Every regulation under this act shall be laid before each House of Parliament forthwith, and, if an address is presented to His Majesty by either House of Parliament within the next subsequent twenty-one days on which that House has sat next after any such regulation is laid before it, praying that the regulation may be annulled, His Majesty in Council may annul the regulation, and it shall thenceforth be void, but without prejudice to the validity of anything previously done thereunder.

(4) Any expenses incurred by the treasury in carrying this act into effect, and the expenses of the Local Government Board and the local pension committees under this act up to an amount approved by the treasury, shall be defrayed out of moneys provided by Parliament.

11.—(1) In the application of this act to Scotland, the expression "Local Government Board" means the Local Government Board for Scotland; the expression "borough" means royal or parliamentary burgh; the expression "urban district" means police burgh; the population limit for boroughs and urban districts shall not apply; and the expression "Lunacy Act, 1890," means the Lunacy (Scotland) Acts, 1857 to 1900.

(2) In the application of this act to Ireland, the expression "Local Government Board" means the Local Government Board for Ireland; ten thousand shall be substituted for twenty thousand as the population limit for boroughs and urban districts; and the expression "asylum within the meaning of the Lunacy Act, 1890," means a lunatic asylum within the meaning of the Local Government (Ireland) Act, 1898.

(3) In the application of this act to the Isles of Scilly, those isles shall be deemed to be a county and the council of those isles the council of a county.

12.—(1) A person shall not be entitled to the receipt of an old age pension under this act until the first day of January nineteen hundred and nine and no such pension shall begin to accrue until that day.

(2) This act may be cited as the Old Age Pensions Act, 1908.

SCHEDULE.

Means of pensioner.	Rate of pension per week.
Where the yearly means of the pensioner as calculated under this act—	
Do not exceed £21 [\$102.20].....	5s. [\$1.22].
Exceed £21 [\$102.20], but do not exceed £23 12s. 6d. [\$114.97]....	4s. [\$0.97].
Exceed £23 12s. 6d. [\$114.97], but do not exceed £26 5s. [\$127.75]...	3s. [\$0.73].
Exceed £26 5s. [\$127.75], but do not exceed £28 17s. 6d. [\$140.52]...	2s. [\$0.49].
Exceed £28 17s. 6d. [\$140.52], but do not exceed £31 10s. [\$153.29]..	1s. [\$0.24].
Exceed £31 10s. [\$153.29].....	No pension.

RECENT REPORTS OF STATE BUREAUS OF LABOR STATISTICS.

MISSOURI.

Twenty-ninth Annual Report of the Bureau of Labor Statistics of the State of Missouri, for the year ending November 5, 1907. J. C. A. Hiller, Commissioner. xi, 797 pp.

This report consists of four parts, as follows: Part I, Surplus products of counties, Government land in Missouri and increase in land values, population of Missouri, good roads for Missouri, foreign immigration into Missouri during 1906-7, etc., 140 pages; Part II, Manufacturing industries, 1906, 548 pages; Part III, Labor organizations and free employment offices, 76 pages; Part IV, Public utility plants and penal and prison shops, 31 pages.

SURPLUS PRODUCTS, GOVERNMENT LAND, LAND VALUES, AND GOOD ROADS.—During 1906 the 114 counties of the State shipped surplus products aggregating in value \$291,921,946. At the time of report (1907), there were 88,414 acres of land in Missouri subject to homestead or cash entry. In 1907 the assessed valuation of land in the State was \$988,454,851, an increase since 1901 of \$195,829,271. During 1907-8 it is proposed to expend \$2,000,000 in building new highways and improving old ones.

MANUFACTURING INDUSTRIES.—A summary of the returns for 1906, embracing 10,915 establishments in 90 industrial groups, shows a total invested capital of \$287,490,985, a total value of materials used of \$310,280,842, and a total value of products of \$510,646,581. During the year there were employed 217,833 salaried persons and wage-earners (181,298 males and 36,535 females), to whom were paid salaries and wages aggregating \$104,598,954. Of wage-earners there were 192,245 (156,840 adult males, 31,398 adult females, and 4,007 children under 16 years of age). There were reported by the establishments during the year 8,279 accidents, of which only 54 resulted fatally.

The following table shows for 1906, for each of the 28 industries in the State, which paid out in wages and salaries during the year a total exceeding \$100,000,000, number of establishments, capital

invested, value of products, amount paid in wages and salaries, and number of employees (wage-earners and salaried persons) by sex:

STATISTICS OF 28 MANUFACTURING INDUSTRIES, 1906.

Industry.	Estab- lish- ments.	Capital invested.	Value of products.	Wages and salaries.	Employees.	
					Male.	Female.
Bakeries.....	930	\$3,845,612	\$12,613,614	\$2,741,714	3,815	1,469
Boots and shoes.....	56	12,835,231	31,896,954	6,518,395	10,693	5,621
Brick and tile.....	167	6,940,472	7,301,367	3,247,968	6,830	28
Candy and confectionery.....	100	1,769,143	8,107,824	1,370,456	1,960	2,062
Carriages and blacksmithing.....	1,187	5,130,412	10,175,190	2,905,989	5,565	136
Car shops.....	34	11,727,701	28,720,756	8,868,865	16,967	304
Cigars and tobacco.....	549	4,342,645	23,984,577	2,501,906	3,583	1,856
Clothing.....	640	7,016,663	18,921,391	5,338,781	4,409	8,830
Cooperage.....	155	2,532,086	6,549,350	7,709,118	5,202	32
Drugs and chemicals.....	161	5,317,532	9,698,241	1,622,421	1,682	1,192
Flour, feed, and meal.....	689	8,597,264	31,552,247	1,738,256	3,532	66
Foundries and machine shops.....	278	13,681,449	19,110,697	6,167,381	10,315	241
Furniture.....	100	3,460,249	6,512,935	2,545,379	3,942	266
Glass.....	20	3,167,782	2,900,467	1,240,160	2,251	75
Grocers' sundries.....	93	4,422,780	14,764,504	1,632,797	1,535	1,007
Harness.....	584	2,464,344	5,557,561	1,238,816	2,248	89
Iron, structural.....	67	1,791,129	3,939,025	1,077,752	1,753	22
Light, heat, and power.....	168	59,326,065	9,528,789	3,335,182	4,693	287
Lime, cement, and plaster.....	34	7,966,604	5,115,797	1,837,427	3,591	9
Liquors, malt.....	56	31,285,949	20,369,806	4,925,020	6,802	492
Lumber and ties.....	940	6,717,534	13,410,582	4,341,015	15,436	68
Meat packing.....	40	6,650,551	75,577,325	3,699,129	6,078	188
Planing mills.....	119	4,414,070	5,562,369	1,838,447	3,189	32
Printing and publishing.....	1,122	13,297,743	23,064,812	8,312,102	10,166	3,634
Smelting and refining.....	24	13,740,454	14,721,596	2,789,427	5,045	7
Stone and marble.....	197	2,299,020	3,095,559	1,308,192	2,611	19
Stoves and ranges.....	31	2,823,339	7,186,307	2,542,709	3,459	60
Tinning and sheet iron.....	698	3,535,909	8,301,525	1,725,078	3,273	286

Additional tables show, for wage-earners, the classified weekly earnings of adult males, adult females, and children under 16 years of age; number and wages of salaried employees, by sex; also, by occupations in each industry, the number of male and of female wage-earners employed, weekly wages paid, hours of labor per day and per week, and per cent of changes in wages as compared with 1905.

LABOR ORGANIZATIONS.—This section of the report presents, in eight tables, statistics relative to the labor organizations of the State. Following is a comparative summary of all labor organizations for the years 1905 and 1906:

STATISTICS OF LABOR ORGANIZATIONS, 1905 AND 1906.

Items.	Year.	
	1905.	1906.
Number of organizations reporting.....	609	642
Number of male members.....	74,303	79,160
Number of female members.....	2,481	2,117
Total number of members.....	76,784	81,277
Average per cent of trade organized.....	77.50	76.90
Average number of hours constituting a day's work.....	9.05	9.05
Established wage rate in cents per hour.....	33.85	33.67
Average number of days employed.....	284	296
Number of organizations reporting more work.....	127	213
Number of organizations reporting less work.....	33	83
Number of organizations paying out-of-work benefit.....	31	20
Total amount of out-of-work benefit paid.....	\$4,936.50	\$5,894.90
Number of organizations having provisions for payment of strike benefits.....	414	440
Average weekly strike benefit allowed per member.....	\$5.06	\$5.81
Number of organizations having provisions for payment of sick and accident benefits.....	126	155

STATISTICS OF LABOR ORGANIZATIONS, 1905 AND 1906—Concluded.

Items.	Year.	
	1905.	1906.
Average weekly sick and accident benefit allowed per member.....	\$5. 10	\$7. 30
Total amount of sick and accident benefit paid.....	\$35, 212	\$38, 199
Number of organizations having provisions for payment of death benefits.....	379	382
Average death benefit allowed per member.....	\$150. 43	\$216. 82
Total amount of death benefit paid.....	\$137, 249	\$161, 311
Total amount paid from all benefit funds.....	\$306, 985	\$322, 647
Total number of strikes.....	40	110
Total number of lockouts.....	9	9
Number of strikes and lockouts settled satisfactorily.....	31	85
Number of strikes and lockouts compromised.....	6	9
Number of strikes and lockouts lost.....	5	9
Disputes still pending at close of report.....	7	16
Number of persons involved in strikes and lockouts.....	8, 145	16, 600
Number of persons directly benefited in strikes and lockouts.....	2, 989	9, 885
Number of persons directly worsted in strikes and lockouts.....	144	399
Amount expended in support of strikes and lockouts.....	\$120, 433	\$222, 653
Amount of wages lost to members through strikes and lockouts.....	\$218, 855	\$180, 623
Number of organizations reporting increase in wages.....	43	82
Number of organizations reporting reduction in hours per day.....	5	11
Number of appeals for arbitration.....	28	42
Number of disputes settled by arbitration.....	28	38
Number of fatal accidents.....	116	128
Number of nonfatal accidents.....	900	1, 363
Total number of accidents.....	1, 016	1, 521
Number of organizations reporting agreements with employers.....	388	477

Considering the three largest cities of the State, in 1906 St. Louis had 208 organizations with 45,579 members (44,130 males and 1,449 females); Kansas City had 86 organizations with 9,381 members (9,286 males and 95 females), and St. Joseph had 39 organizations with 3,329 members (2,881 males and 448 females).

FREE EMPLOYMENT OFFICES.—The operations of the free employment offices, located in St. Louis, Kansas City, and St. Joseph, for the year ending September 30, 1907, are summarized in the statement following:

OPERATIONS OF FREE EMPLOYMENT OFFICES, 1907.

City.	Applications for positions.		Applications for help.		Positions secured.	
	Males.	Females.	Males.	Females.	Males.	Females.
St. Louis.....	4, 230	315	4, 185	660	3, 276	229
Kansas City.....	3, 195	353	5, 521	1, 526	2, 670	172
St. Joseph.....	3, 809	757	2, 957	918	2, 649	512
Total.....	11, 235	1, 425	12, 663	3, 104	8, 595	913

During the season 2,126 applications for harvest hands were made to the Kansas City and St. Joseph offices, of which number only 1,515 could be supplied.

PUBLIC UTILITY PLANTS.—This section presents statistics relative to telephone systems, water works, gas plants, and electric generating stations. The statistics, which are for both private and municipal owned plants, cover capital invested, receipts and expenditures, number of employees, wages paid, and other data pertaining to the various services.

PRISON SHOPS.—Statistics of manufacturing in the contract shops in the State penitentiary are here presented. The amount paid the State for convict labor in 1906 was \$277,059. The value of goods manufactured during the year aggregated \$2,279,054. Also, statistics are presented for four lesser penal and reformatory institutions.

RHODE ISLAND.

Twentieth Annual Report of the Commissioner of Industrial Statistics, made to the General Assembly at its January session, 1907. George H. Webb, Commissioner. xiv, 541 pp.

This report is made up of four parts, as follows: Part I, The ice industry of Rhode Island, 30 pages; Part II, Industrial statistics and labor laws, 116 pages; Part III, Industries and industrial opportunities by cities and towns, 187 pages; Part IV, Strikes during 1906, directory of trade unions, wages and hours of labor, etc., in the building trades in selected cities, and decisions of courts affecting labor, 208 pages.

THE ICE INDUSTRY.—This report on the ice industry of Rhode Island is based upon statistics furnished by 83 corporations, firms, and individuals operating in the State on March 1, 1906. In addition to the tons of ice harvested and manufactured during the year reported upon, prices for ice both at wholesale and at retail have been obtained from various points in the State, and are presented in comparison with prices obtained from 25 selected cities of the country.

INDUSTRIAL STATISTICS.—In this section of the report comparative statistics for the years 1904 and 1905 are given for the textile, rubber, and fine metal manufacturing industries, showing number of establishments and character of organization; highest, lowest, and average number of employees; wages and number of employees 16 years of age or over, by sex, and children under 16 years of age; cost of materials used and value of goods made and work done; number and character of machines in operation, etc.; also, aggregated statistics for all industries of the State are presented. The fine metal work embraces jewelry, jewelers' findings, silversmithing and silverware, refining, electroplating, enameling, engraving, die-sinking, and lapidary work.

Comparative summary statistics for the years 1904 and 1905 are presented for 9 selected industries in the table following:

COMPARATIVE STATISTICS FOR 9 SELECTED MANUFACTURING INDUSTRIES, 1904 AND 1905.

Industry.	Year.	Estab- lish- ments.	Average number of em- ployees.	Total wages paid.	Cost of ma- terials used.	Value of products, in- cluding work done.
Gold and silver reducing and re- fining.....	1904	10	77	\$54,809	\$3,987,262	\$4,260,698
	1905	10	81	63,304	5,618,052	5,909,588
Jewelry.....	1904	197	6,475	3,365,274	6,657,594	14,431,756
	1905	197	7,466	3,819,586	7,516,412	16,250,157
Rubber and elastic goods.....	1904	9	991	416,642	1,639,301	2,582,180
	1905	9	1,957	773,704	3,067,132	4,614,356
Silversmithing and silverware....	1904	10	1,919	1,439,688	2,423,361	5,323,264
	1905	10	2,143	1,606,692	2,803,829	6,574,231
Cotton goods.....	1904	99	24,758	8,890,166	19,665,504	24,573,450
	1905	99	25,712	9,610,269	22,202,254	26,810,724
Dyeing and finishing textiles.....	1904	37	7,562	3,181,597	3,639,268	9,981,457
	1905	37	8,083	3,372,493	3,974,081	11,259,063
Hosiery and knit goods.....	1904	15	1,721	573,680	2,271,099	3,344,655
	1905	15	1,812	605,232	2,398,280	3,562,067
Silk and silk goods.....	1904	8	1,291	479,991	1,695,950	2,555,996
	1905	8	1,299	455,512	1,336,409	2,152,140
Woolen and worsted goods.....	1904	82	21,610	9,102,479	35,936,232	52,640,763
	1905	82	23,252	10,140,162	46,285,887	61,800,256

Comparing the data for the two years, the total establishments (241) in the 5 textile industries show 60,158 employees in 1905, against 56,942 in 1904, a total wages paid of \$24,183,668 in 1905, against \$22,227,913 in 1904, a cost of materials used of \$76,196,891 in 1905, against \$63,208,053 in 1904, and a value of products of \$115,584,260 in 1905, against \$103,096,311 in 1904. The total establishments (1,617) in all manufacturing industries of the State show 106,758 employees in 1905, against 97,318 in 1904, a total wages paid of \$47,898,140 in 1905, against \$43,112,637 in 1904, a cost of materials used of \$139,171,498 in 1905, against \$112,872,261 in 1904, and a value of products of \$234,042,897 in 1905, against \$202,109,583 in 1904.

LABOR LAWS.—Under this heading are reproduced the various laws of the State pertaining to labor.

INDUSTRIES AND INDUSTRIAL OPPORTUNITIES.—This part of the report contains a comprehensive presentation of the industries and industrial opportunities of the State by cities and towns, a list of the manufacturing establishments by cities and towns, and a list of abandoned farms by towns. The information is intended to be of value to those seeking location for new industrial enterprises.

STRIKES.—This presentation consists of a chronological arrangement of the strikes occurring in the State during the year ending December 31, 1906, compiled from records kept by the state labor bureau, from the columns of the public press, and from other sources.

DIRECTORY OF TRADE UNIONS.—This directory is a list of 1 state, 6 central, and 163 local bodies, with the name and address of the secretary of each and the time and place of meeting.

THE BUILDING TRADES.—Under this caption is presented statistics of rates of wages, hours of labor, and the Saturday half holiday in the building trades in 36 selected cities of the United States. The data were furnished by the secretaries of international and local trade unions, and are of value for purposes of comparison.

COURT DECISIONS.—Under this heading are reproduced decisions of courts relating to labor, as reported by the United States Bureau of Labor.

RECENT FOREIGN STATISTICAL PUBLICATIONS.

BULGARIA.

Recensement des Industries Encouragées par l'État (31 décembre, 1904).

Principauté de Bulgarie, Direction de la Statistique. 1906. xxii, 101 pp.

This is the first census of manufactures taken in Bulgaria. It includes only those manufacturing establishments which are "encouraged by the State," i. e., which enjoy certain privileges according to the law of 1894, as amended in 1897. These are the exclusive privileges to manufacture within certain geographical limits for a definite number of years; export premiums; reduced railway freight rates for raw materials or for the finished products; free importation of machinery or raw materials; or preference within certain limits over foreign products, notwithstanding that higher prices are charged, in cases of purchases by the Government.

The following industries are granted some or all of these advantages and are therefore included in this enumeration: Textiles and other manufactures of fibers, candles, earthen and china ware, glass and glassware, sugar, paper and paper goods, carriages and other vehicles, chemical products, matches, glue, products of mines and of metals extracted from Bulgarian soil, cement, and lime. Only establishments which have invested at least 25,000 francs (\$4,825) in land, buildings, machinery, and plant, or which employ at least 20 persons, are entitled to such encouragement. Owing to these limitations, several important branches of industry are omitted from this manufacturing census, such as building and construction operations, transportation, printing, bookbinding, tobacco, mineral waters, etc. Nevertheless, it is stated that the census includes the greater part of the factory industry in Bulgaria.

The census embraces both the establishments and the workingmen employed, two schedules having been provided, one for the establishment and another for the employee. The results of the census are presented in 20 general tables, of which 13 deal mainly with the establishments, and 7 with the employees. The information obtained and presented includes the following subjects: (a) For establishments—capital invested, persons employed, nature of ownership,

date of establishment, mechanical power used, number of days operated, value of raw materials, quantity and value of fuel consumed, and quantity and value of products; (b) for employees—nationality, education, conjugal condition, ownership of real estate, age, methods of wage payment, wages, and hours of labor.

Altogether 166 establishments were included in the enumeration. The capital invested amounted to 30,697,285 francs (\$5,924,576). The total number of persons employed was 7,026, of whom 877 were salaried employees and 6,149 wage-workers, 4,411 or 71.7 per cent of the latter being males and 1,738 or 28.3 per cent females. The total value of raw materials was 21,913,594 francs (\$4,229,324), and the value of products 32,776,975 francs (\$6,325,956).

Of the 166 establishments enumerated, 57 manufactured food products, and 51 textiles. The more important data obtained by the census for the separate industrial groups are shown in the following table:

STATISTICS OF ESTABLISHMENTS, BY INDUSTRIES, ACCORDING TO THE CENSUS OF DECEMBER 31, 1904.

Industry.	Number of establishments.	Capital invested, Dec. 31, 1904.	Salaried employees.	Wage-workers.			Horse-power of mechanical motors.	Value of new materials.	Value of products.
				Male.	Female.	Total.			
Mines.....	3	\$149,397	72	1,347	.....	1,347	71	.....	\$264,010
Metals.....	8	71,352	28	238	.....	238	43	\$29,176	96,942
Earthen and china ware.....	6	371,891	37	170	.....	170	218	9,898	84,996
Chemical products.....	15	260,350	44	128	65	193	103	229,921	280,504
Food products.....	57	2,775,530	319	877	106	983	2,420	2,240,809	2,981,248
Textiles.....	51	1,281,776	270	1,178	1,565	2,743	1,705	1,342,648	2,072,225
Wood manufactures.....	8	113,796	39	185	.....	185	268	82,858	127,077
Hides and leather.....	13	127,639	34	237	.....	237	93	274,724	323,757
Paper.....	1	35,788	4	20	2	22	26	2,040	5,122
All other.....	4	737,057	30	31	.....	31	4,030	17,250	90,076
Total.....	166	5,924,576	877	4,411	1,738	6,149	8,977	4,229,324	6,325,956

Of the 166 establishments included, 154 owned their buildings. These were distributed, according to the amount of capital invested, as follows:

ESTABLISHMENTS OWNING THEIR BUILDINGS, BY AMOUNT OF CAPITAL INVESTED.

Amount of capital invested by each establishment.	Establishments.		Total capital invested.	
	Number.	Per cent.	Amount.	Per cent.
Less than 25,000 francs (\$4,825).....	28	18.2	\$78,538	1.3
25,000 francs (\$4,825) or less than 50,000 francs (\$9,650).....	29	18.8	206,545	3.5
50,000 francs (\$9,650) or less than 100,000 francs (\$19,300).....	29	18.8	382,752	6.5
100,000 francs (\$19,300) or less than 250,000 francs (\$48,250).....	43	27.9	1,262,103	21.4
250,000 francs (\$48,250) or less than 500,000 francs (\$96,500).....	13	8.4	851,793	14.4
500,000 francs (\$96,500) or less than 750,000 francs (\$144,750).....	5	3.3	593,974	10.1
750,000 francs (\$144,750) or less than 1,000,000 francs (\$193,000).....	4	2.6	637,213	10.8
1,000,000 francs (\$193,000) or over.....	3	2.0	1,982,773	33.0
Total.....	154	100.0	5,905,691	100.0

The greater number of the establishments, namely, 129, or 83.7 per cent, had a capital of less than 250,000 francs (\$48,250) each; 22 establishments had a capital of from 250,000 francs (\$48,250) to 1,000,000 francs (\$193,000) each; and 3 had a capital of over 1,000,000 francs (\$193,000). The classification of the establishments by the number of workingmen employed is given in the following table:

ESTABLISHMENTS, BY NUMBER OF WAGE-WORKERS EMPLOYED.

Wage-workers employed.	Establishments.		Total wage-workers.	
	Number.	Per cent.	Number.	Per cent.
None.....	10	6.0	.....	.....
Less than 5.....	17	10.2	51	0.8
5 to 9.....	28	16.9	204	3.3
10 to 19.....	45	27.1	634	10.3
20 to 29.....	23	13.9	540	8.9
30 to 49.....	18	10.9	679	11.1
50 to 99.....	15	9.0	1,060	17.2
100 to 499.....	9	5.4	1,701	27.7
500 to 999.....	.....	.....	.....	.....
1,000 or more.....	1	.6	1,271	20.7
Total.....	166	100.0	6,149	100.0

It is shown that the average number of workingmen per factory was 37, but 100 establishments, or 60.2 per cent, employed less than 20 workers each.

The next table shows the employees grouped according to age and sex:

NUMBER AND PER CENT OF WAGE-WORKERS EMPLOYED, BY AGE AND SEX.

Age.	Male.		Female.		Total.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
12 years or less.....	22	0.5	71	4.1	93	1.5
13 to 15 years.....	171	3.9	468	26.9	639	10.4
16 to 20 years.....	860	19.5	919	52.9	1,779	28.9
21 to 30 years.....	1,581	35.9	123	7.1	1,704	27.7
31 to 40 years.....	969	21.7	53	3.0	1,012	16.5
41 to 50 years.....	491	11.1	58	3.3	549	8.9
51 to 60 years.....	235	5.3	36	2.1	271	4.4
61 years or over.....	92	2.1	10	.6	102	1.7
Total.....	4,411	100.0	1,738	100.0	6,149	100.0

Of all the persons employed, 93, or 1.5 per cent, were below 13 years of age, and 639, or 10.4 per cent, from 13 to 15 years of age, making a total of 732 children, or 11.9 per cent of all the workers. The largest class was between 16 and 30 years of age, namely, 56.6 per cent. The employment of persons over 50 years of age was exceptional. Considerable differences are noticed between the sexes with regard to age distribution. Of the male employees, only 4.4 per cent, and of the female employees 31.0 per cent were below 16 years of age. On the other hand, very few adult women were employed, only 280, or 16.1 per cent, being over 20 years of age.

The usual method of payment was by the day, over one-half of all the workers receiving daily wages. A little less than one-fourth worked for other time wages, such as by the week, month, or year. Piece wages or contract wages were comparatively infrequent. Piece wages were almost limited to the textile industry, and contract wages to the mining industry. The following data in regard to the methods of payment are given for 6,110 out of the 6,149 employees:

NUMBER OF WAGE-WORKERS REPORTING METHOD OF WAGE PAYMENT, BY SEX.

Method of wage payment.	Number of wage-workers reporting.			
	Male.	Female.	Total.	
			Number.	Per cent.
By day.....	2,081	1,256	3,337	54.6
By week, month, or year.....	1,262	182	1,444	23.6
By piece.....	440	297	737	12.1
By contract.....	592	.....	592	9.7
Total.....	4,375	1,735	6,110	100.0

The daily wages have been ascertained for 5,262 persons,^(a) of whom 3,683 were male and 1,579 female employees. Of this total only 803, or 15.3 per cent, received more than 2 francs (\$0.386) per day. The remaining employees fall into two nearly equal classes, 2,282, or 43.4 per cent, receiving between 1 franc (\$0.193) and 2 francs (\$0.386), and 2,177, or 41.3 per cent, receiving 1 franc (\$0.193) or less.

There is a considerable difference between the wages of male and female workers. Of the latter only 7, or 0.4 per cent, received over 2 francs (\$0.386) per day; 153, or 9.7 per cent, received from 1 franc (\$0.193) to 2 francs (\$0.386) per day; and 1,419, or 89.9 per cent, received 1 franc (\$0.193) or less per day. Of the male workers, 796, or 21.6 per cent, received over 2 francs (\$0.386) per day; 2,129, or 57.8 per cent, received from 1 franc (\$0.193) to 2 francs (\$0.386), and 758, or 20.6 per cent, received 1 franc (\$0.193) or less. The following table shows the 5,262 workers, by sex and wage groups:

NUMBER AND PER CENT OF WAGE-WORKERS FOR WHOM DAILY WAGES WERE ASCERTAINED, BY SEX AND WAGE GROUPS.

Daily wages.	Males.		Females.		Total.	
	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.
0.30 franc (\$0.058) or less.....	24	0.7	99	6.3	123	2.3
0.30 franc (\$0.058) to 0.50 franc (\$0.097).....	60	1.6	417	26.4	477	9.1
0.50 franc (\$0.097) to 0.80 franc (\$0.154).....	203	5.5	642	40.7	845	16.0
0.80 franc (\$0.154) to 1 franc (\$0.193).....	471	12.8	261	16.5	732	13.9
1 franc (\$0.193) to 1.50 francs (\$0.290).....	1,142	31.0	125	7.9	1,267	24.1
1.50 francs (\$0.290) to 2 francs (\$0.386).....	987	26.8	28	1.8	1,015	19.3
Over 2 francs (\$0.386).....	796	21.6	7	.4	803	15.3
Total.....	3,683	100.0	1,579	100.0	5,262	100.0

^a In addition to 3,337 paid by the day this total includes 1,444 paid by the week, month, or year and 481 paid by piece or contract for whom daily wages were computed.

The distribution of wage-workers by industries, sex, and wage groups is shown in the following table:

NUMBER OF MALE AND OF FEMALE WAGE-WORKERS FOR WHOM DAILY WAGES WERE ASCERTAINED, BY INDUSTRIES AND WAGE GROUPS.

Industry.	Total wage-workers.	Males receiving daily wages of—				Females receiving daily wages of—			
		1 franc (\$0.193) or less.	1 franc (\$0.193) to 2 francs (\$0.386)	Over 2 francs (\$0.386).	Total.	1 franc (\$0.193) or less.	1 franc (\$0.193) to 2 francs (\$0.386).	Over 2 francs (\$0.386).	Total.
Textiles.....	2,629	338	598	280	1,161	1,310	151	7	1,468
Food products.....	935	57	612	177	846	88	1		89
Mines.....	775	195	482	98	775				
Metals.....	214	68	75	71	214				
Hides and leather.....	210	48	96	67	210				
Wood manufactures.....	182	14	78	90	182				
Earthen and china ware.....	158	18	127	13	158				
Chemical products.....	108	10	47	31	88	19	1		20
Paper.....	22	7	12	1	20	2			2
All other.....	29	3	8	18	29				
Total.....	5,292	758	2,129	796	3,683	1,419	153	7	1,579

The wages were lowest in the textile industries, mainly because of the large number of women employed, and highest in the manufacture of wood products. The average daily wage for all male workers was 1.67 francs (\$0.322) per day; for the female workers it was 0.71 franc (\$0.137), and for both sexes 1.38 francs (\$0.266) per day. In the wood industry the average wage was 2.48 francs (\$0.479), in metal manufacturing 2.16 francs (\$0.417), and in the textile industry, 1.04 francs (\$0.201).

Interesting data are presented in the following table, showing the wage distribution for five separate age groups for each sex.

NUMBER OF MALE AND OF FEMALE WAGE-WORKERS FOR WHOM DAILY WAGES WERE ASCERTAINED, BY WAGE AND AGE GROUPS.

Daily wages per worker.	12 years or less.	13 to 15 years.	16 to 20 years.	21 to 60 years.	61 years or over.	Total.
MALES.						
0.20 franc (\$0.058) or less.....	2	8	14			24
0.20 franc (\$0.058) to 0.50 franc (\$0.097).....	5	9	34	12		60
0.50 franc (\$0.097) to 0.80 franc (\$0.154).....	1	86	126	38	2	203
0.80 franc (\$0.154) to 1 franc (\$0.193).....	9	82	240	137	3	471
1 franc (\$0.193) to 1.50 francs (\$0.290).....	1	4	259	860	18	1,142
1.50 francs (\$0.290) to 2 francs (\$0.386).....			90	876	21	987
Over 2 francs (\$0.386).....			31	738	24	796
Total.....	18	142	794	2,661	68	3,683
FEMALES.						
0.20 franc (\$0.058) or less.....	27	65	6	1		99
0.20 franc (\$0.058) to 0.50 franc (\$0.097).....	32	186	125	64		417
0.50 franc (\$0.097) to 0.80 franc (\$0.154).....	5	108	448	78	3	642
0.80 franc (\$0.154) to 1 franc (\$0.193).....	2	44	113	97	5	261
1 franc (\$0.193) to 1.50 francs (\$0.290).....		24	81	20		125
1.50 francs (\$0.290) to 2 francs (\$0.386).....			22	6		28
Over 2 francs (\$0.386).....			4	2		7
Total.....	66	428	809	268	8	1,579

For males below 16 years of age the usual range was between 0.50 franc (\$0.097) and 1 franc (\$0.193), 128 out of 160, or 80 per cent, of this age group receiving such wages. Of the male persons between 16 and 20 years of age, 63 per cent received from 0.80 franc (\$0.154) to 1.50 francs (\$0.29); and of the adults, 65 per cent received from 1 franc (\$0.193) to 2 francs (\$0.386). In the case of female employees, 89 per cent of the girls 12 years of age or less received 0.50 franc (\$0.097) or less per day; of those from 13 to 15 years of age 69 per cent received from 0.30 franc (\$0.058) to 0.80 franc (\$0.154); of the young women 16 to 20 years of age, more than one-half received from 0.50 franc (\$0.097) to 0.80 franc (\$0.154) and 86 per cent received from 0.30 franc (\$0.058) to 1 franc (\$0.193); again, of the adult women 66 per cent received from 0.50 franc (\$0.097) to 1 franc (\$0.193).

In the next two tables the wage-workers are grouped according to hours of labor and age and hours of labor and sex, respectively:

NUMBER AND PER CENT OF WAGE-WORKERS EMPLOYED, BY HOURS OF LABOR AND AGE GROUPS

Age groups.	8 hours or less.		8 to 10 hours.		10 to 12 hours.		12 to 15 hours.		Over 15 hours.		Total.
	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	
12 years or less.....	4	4.3	9	9.7	62	66.6	17	18.3	1	1.1	93
13 to 15 years.....	13	2.0	66	10.3	424	66.4	130	20.4	6	.9	630
16 to 20 years.....	41	2.3	424	23.8	992	55.8	296	16.6	26	1.5	1,779
21 to 30 years.....	42	2.4	777	45.6	717	42.1	117	6.9	51	3.0	1,704
31 to 40 years.....	16	1.6	492	48.6	371	36.7	84	8.3	49	4.8	1,012
41 to 50 years.....	9	1.6	259	47.2	189	34.4	68	12.4	24	4.4	540
51 to 60 years.....	6	2.2	123	45.4	104	38.4	29	10.7	9	3.3	271
61 years or over.....	3	2.9	38	37.3	43	42.2	15	14.7	3	2.9	102
Total.....	134	2.2	2,188	35.6	2,902	47.2	756	12.3	160	2.7	6,140

NUMBER AND PER CENT OF WAGE-WORKERS EMPLOYED, BY HOURS OF LABOR AND SEX.

Sex.	8 hours or less.		8 to 10 hours.		10 to 12 hours.		12 to 15 hours.		Over 15 hours.		Total.
	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	
Male.....	87	2.0	2,005	45.4	1,843	41.8	307	7.0	160	3.8	4,411
Female.....	47	2.7	183	10.5	1,059	60.9	449	25.9	.....	.....	1,738
Total.....	134	2.2	2,188	35.6	2,902	47.2	756	12.3	160	2.7	6,140

Of the wage-workers enumerated, 3,827 persons, or 62.2 per cent, worked more than ten hours per day. Fifteen per cent worked more than twelve hours per day. For the female employees the hours are found to be longer, 86.8 per cent working over ten hours a day, while for the male employees the proportion working over ten hours per day is only 52.6 per cent. This is explained by the long hours of labor in the textile industry. The distribution of employees by age and hours of work shows decidedly longer hours for the younger age groups.

GREAT BRITAIN.

Sixth Report of Proceedings under the Conciliation (Trade Disputes) Act, 1896. 1905-1907. (Published by the Board of Trade.)
110 pp.

This is a report of the proceedings under the Conciliation Act, 1896, and covers a period of two years, from July 1, 1905, to June 30, 1907. During the period 51 cases were presented for settlement, of which 23 occurred in the last six months of the period (January to June, 1907). The total number of cases in which a stoppage of work occurred was 16.

In the table following is shown the number of cases dealt with and settled in each of the periods covered by the six reports since August, 1896:

CASES DEALT WITH AND SETTLED UNDER THE CONCILIATION (TRADE DISPUTES) ACT, 1896, FROM AUGUST, 1896, TO JUNE, 1907.

Report and period covered.	Cases dealt with.	Cases settled under the act.
First report (August, 1896, to June, 1897).....	35	19
Second report (July, 1897, to June, 1899).....	32	22
Third report (July, 1899, to June, 1901).....	46	29
Fourth report (July, 1901, to June, 1903).....	41	29
Fifth report (July, 1903, to June, 1905).....	27	24
Sixth report (July, 1905, to June, 1907).....	51	45
Total.....	232	168

Of the 232 cases dealt with since August, 1896, in 140 cases the application for arbitration or conciliation was made by both parties to the dispute, in 60 cases by workmen, in 22 cases by employers, and in the remaining by arbitrators who had failed to agree, etc. The number of cases of joint application during the two years under review was 46, or 90 per cent of all the cases dealt with.

Of the 51 disputes dealt with during the two years covered by the report, 14 were in the building trades, 13 in the boot and shoe trade, 7 in the metal, engineering, and shipbuilding trades, 7 in the printing and allied trades, 4 in mining and quarrying, and 6 in other trades. During the period since the act came into operation, 82 cases have arisen in the building trades, 45 in the metal, engineering, and shipbuilding trades, 27 in mining and quarrying, 20 in the boot and shoe trade, 17 in transportation, 14 in the printing and allied trades, 11 in the textile trades, and 16 in other trades.

Among the cases settled during the period under review, 2 were of special importance—the Nottingham lace trade dispute and the music hall dispute. Of the 13 cases in the boot and shoe industry, 4 had reference to applications made by the work people for a minimum wage to be fixed or for the raising of a minimum already in existence. The awards made fixed a minimum wage for lasters and

finishers in London, for clickers and pressmen in Kettering, and for all classes of adult male boot and shoe operatives in Anstey and Stafford. Some of the building trades cases were also of importance, deciding, as they did, the wages, hours, or conditions of employment of various classes of workmen in the building trades of London, Manchester, Glasgow, Birkenhead, Wakefield, and Coventry. Among the cases which occurred in the printing and publishing trades were those at London, Glasgow, Bolton, and Reading. The award in the Glasgow case fixed the pay of compositors employed on newspaper work, and that in the Bolton case the pay of printers' helpers.

Appendixes give tabular summary and detailed statement of each case presented to the board during the period covered by this report; text of awards and agreements made under the Conciliation Act during the same period; rules of conciliation boards and other agreements containing clauses which provide for reference of disputes to the Board of Trade, failing their settlement by other agencies, and a reproduction of the text of the Conciliation Act, 1896.

Report of the Departmental Committee Appointed to Consider Whether the Post-Office should Provide Facilities for Insurance under the Workmen's Compensation Acts. 1907. 170 pp.

This document consists of the report of a departmental committee which was appointed March 1, 1907, by the postmaster-general (1) To consider whether it is practicable, and, if practicable, whether it is desirable, for the post-office to provide facilities for the insurance of employers in respect to their liabilities under the Workmen's Compensation Acts, either generally or subject to limitations. (2) And further, to consider whether it is desirable that steps should be taken to encourage the use of the present life insurance system of the post-office; and, if so, what steps.

The committee held 13 meetings, 10 of which were occupied in the taking of evidence, and 23 witnesses were examined. Evidence was given by officials from the post-office and home office, factory inspectors, representatives of insurance companies, of agriculture, of the building, fishing, and coasting trades, and of the Women's Trades Union League, etc. In reply to questions embodied in circular letters, there were reviewed the views of 66 chambers of agriculture and farmers' associations and of a number of miscellaneous industries. The report of the committee was handed to the postmaster-general on June 5, 1907.

It appeared from an estimate obtained by the Home Office that the number of workmen added by the act of 1906 to the classes already entitled to compensation for accidents incurred in the course of their employment was approximately 6,000,000. A considerable proportion of these workmen, however, would be in the service of employers

fully cognizant of the advantages of insurance and of the facilities for effecting it, or strong enough to bear the risks themselves; so that, in considering to what extent the act might fail in its object through lack of knowledge or of facilities for insurance, the figure of 6,000,000 must be largely reduced. Yet, in the opinion of the committee, there would remain a considerable number of small employers so likely to be ignorant of their fresh responsibilities as to make it important to take special measures for giving the widest publicity to the provisions of the act before it came into operation. There was a general consensus of opinion among the witnesses that, whatever facilities were offered for insurance, there would always remain a number of small employers whom nothing short of a system of compulsion would induce to insure. It was obvious to the committee that the post-office could do nothing to help this class, and that the necessity for post-office interference, if it existed at all, must lie among the small employers who were anxious to meet their liabilities, but experienced difficulty in obtaining insurance.

The committee were led, therefore, to inquire into the adequacy of the facilities for insurance existing, or likely to exist, throughout the country, both as regards cost to the insurer and geographical distribution. Information as to the facilities for insurance were obtained from the large insurance companies, and the Association of Accident Companies delegated witnesses, who gave full and valuable evidence. The delegates of the companies gave a pledge that they would be prepared to undertake the insurance of every class of subject. The evidence of the companies and of the independent witnesses showed that there was keen competition among the companies for business, that the whole country was covered by the organization of the insurance offices, and that all classes were afforded the opportunity of readily effecting insurance with offices of good standing.

The extensive facilities which already exist, and the uncertainty of the situation, appeared to the committee to constitute weighty reasons against any hasty action on the part of the Government. At the outset two difficulties would arise: (1) No scheme whatever involving the post-office as principal, or money-spending agent, could be set up without special legislation. (2) The act coming into force on July 1, 1907, the post-office could not possibly organize an effective department, requiring a fresh staff, before that date. These objections were considered fatal to the immediate creation of a scheme of state insurance against liability under the Workmen's Compensation Acts, and the committee was impressed by certain special difficulties which would beset a Government department, such as the post-office, in dealing with insurance of this character.

As an alternative, which it was contended would be free from some of the difficulties previously indicated and yet would afford valuable

facilities to the public, schemes not covering the whole category of risks were presented by several witnesses. These limited schemes may be divided into three classes: (1) Insurance of small employers only, to be defined either by the number of workmen employed or by the amount of wages paid. (2) Insurance confined to special classes of employment, especially those involving little risk, as domestic servants, shop assistants, clerks, teachers, etc. (3) Insurance in any class of employment against a part only of the liability. While each of these classes of schemes had, no doubt, something to recommend it, the committee were compelled to point out that many of the objections already made to a complete state scheme applied with but little less force to a limited scheme; also, there were certain particular objections made to each of the suggested forms of limitation.

The schemes that have been considered so far have involved the action of the State as principal; but there were other methods suggested whereby the organization of the post-office acting as agent might be utilized for increasing the facilities for transacting insurance business throughout the country.

As a result of the inquiry, the committee felt unable to suggest for immediate adoption any scheme involving post-office action as principal or as agent. However, the committee thought it possible for the post-office to afford assistance toward publicity in two ways: (1) By the exhibition at all post-offices of a notice drawing attention to the liabilities imposed by the act, and the advisability of insurance against them, to be framed in conjunction with the Home Office. (2) By an offer to distribute at post-office counters an alphabetical list of accident insurance companies, with the definite notification that the list is prepared by the companies and in no way commits the post-office.

The present report covers only the first part of the inquiry directed by the postmaster-general; the consideration and report on the second part the committee proposed to defer until a later date.

INDIA.

Report of the Textile Factories Labor Committee Appointed by the Government of India, December, 1906, to Inquire into the Conditions of Factory Labor in India. 1907. 81 pp.

This document consists of the report of the textile factories labor committee appointed December 17, 1906, by the government of India on the recommendation of the secretary of state for India, to inquire into the conditions of factory labor in India.

The investigation was directed, in the first instance, toward ascertaining the actual conditions prevailing in India, and the specific points of inquiry referred to the committee were as follows:

(1) Whether the working hours of adult males should be limited and whether the physique of operatives is affected by long hours; (2) whether before children are allowed to work in factories certificates of age and fitness should be required; (3) whether the minimum age of children should be raised beyond 9; (4) whether as the result of employment as adults of persons between the ages of 12 and 14, there has been physical deterioration requiring the creation by law of a special class of workers known as young persons; (5) whether a separate staff of medical factory inspectors should be entertained.

Though the inquiries to be made by the committee were directed more particularly toward the settlement of the five preceding questions, they were requested to put forward recommendations for the amendment of the existing law or practice, if they were of the opinion "that the present hours of work of operatives are excessive, that the conditions of factory labor are otherwise injurious or oppressive, or that abuses exist in connection with the employment of children or young persons." The homes and surroundings of the mill hands were also given consideration.

This investigation to be made by the committee was intended to be preliminary only in character; but should it establish the existence of abuses which required to be remedied, a representative commission was to be appointed to consider the whole subject comprehensively before any radical changes in the present factory law were made.

The committee visited the cities of Bombay, Ahmedabad, Calcutta, Madras, Delhi, Agra, Cawnpore, and Nagpur, where textile mills were inspected and evidence taken from local officials, mill owners, managers, operatives, etc. The report on its inquiries was submitted April 5, 1907.

The report of the work of the committee is classed under the following general heads: Administration of factory laws, system of inspection, certificates of age and physical fitness, minimum age for employment of children, employment of women, adult male labor, physique of operatives, "particulars" of work and wages, proposals for the creation of a new class of workers to be known as "young persons," sanitation of factories and mills, means of escape in case of fire, guarding of machinery, etc.

In the conclusions arrived at by the committee were suggested amendments to the present Indian Factories Act relating to administration, fencing of machinery, holidays, and the "occupier" of factories and workshops.

There were twenty definite suggestions made by the committee—

1. That there may be as little delay as possible in giving effect to proposals in contemplation for improving the homes and home surroundings of mill hands.

2. That arrangements be made to secure uniformity of administration of the factory act throughout India.

3. That systems of inspection, the strength and composition of the staff of inspectors should be considered with a view to securing efficiency.

4. That medical inspectors whose whole time should be devoted to their duties under the factories act be appointed.

5. That certificates of age and physical fitness for employment be required prior to half-time employment, and prior to employment as an adult, * * * and that they be the personal property of the persons to whom they apply.

6. That consideration be given to the suggestion made by many experienced witnesses that elementary teachers to be paid by the mill owners should be appointed for instruction of half-time children in suitable places on the mill premises.

7. That clear and definite laws be made, requiring that half-time children shall be employed only in sets—either on the morning and afternoon set system, or the double-set system largely adopted in Indian mills. That efficient measures be taken to secure that the children work only in their proper sets, and that the prescribed hours of labor are not exceeded.

8. That night work of women be prohibited.

9. That by suitable administrative regulations young children should be prevented from accompanying their parents to rooms in which they incur risk from running machinery or the inhalation of dust or impure vapors.

10. That the period of employment in Indian factories shall be either between the hours of 5.30 a. m. and 6 p. m., or 6 a. m. and 6.30 p. m. That the engine shall cease running for half an hour between the hours of noon and 2 p. m. * * *

11. That the names of all persons under the age of 16 years be entered in the prescribed register, but that certificates of age and physical fitness be only required up to the age of 14 years.

12. That samples of air collected under prescribed conditions be taken in works in all parts of India, with a view to hereafter decide upon a suitable standard of ventilation.

13. That wet and dry bulb thermometers be placed in all humid cotton cloth factories, readings taken at fixed times, and returns forwarded monthly; these returns to be eventually considered with a view to deciding the amount of moisture necessary for manufacturing purposes, bearing in mind the health of the operatives.

14. That a standard of purity for water to be used for introducing moisture into the mills and factories be fixed.

15. That the dates of lime washing be entered in a prescribed register.

16. That particular attention be paid to carrying off dust when generated in quantities likely to cause injury to health.

17. That when inquiries now going on are complete, should it be found that workers in woolen mills are liable to contract anthrax, the special precautions framed under the English Factory Act be considered.

18. That the latrine accommodation be increased to one seat for every twenty-five persons and that separate urinal accommodation be provided in all mills.

19. That doors in the various rooms be hung in such a way that they can be immediately opened from inside and be constructed so as to open outward. (This is recommended as a safety measure in case of fire.)

20. That in certain respects—chiefly in ginning mills—more attention be paid to the fencing of dangerous mill gearing and machinery.

ITALY.

Statistica degli scioperi avvenuti in Italia nell' Anno 1904. Ufficio del Lavoro, Ministero di Agricoltura, Industria, e Commercio. 1907. viii, 317 pp.

This is the twelfth of a series of reports on strikes and lockouts published by the Italian Department of Agriculture, Industry, and Commerce. The present volume, which is the first report compiled by the Bureau of Labor of that department on this subject, shows in detailed tables and text statements the most important facts in reference to the strikes occurring during the year 1904, the strikes being separated into two categories: (1) Those occurring in industries other than agriculture, and (2) those taking place in agricultural industries alone. The report also contains a summary table showing the number of strikes and strikers for each year of the period 1879 to 1904.

The present volume differs considerably from those previously published by the General Statistical Office of the same department. There are in all nine tables giving information in regard to the strikes, as follows: (1) Number of strikes, establishments, and strikers, and the relation to the industry and labor organization; (2) strikes, by months; (3) strikes and strikers, by size of establishment; (4) women in strikes; (5) children in strikes; (6) duration and results of strikes; (7) causes of strikes; (8) cost of strikes; (9) workingmen discharged after strikes. The data in regard to these subjects are far from complete. The strikes for each of the 44 industries named in the report are treated in a separate chapter, but for many of the industries certain tables are missing. Summary statements are given only partly for several of the tables. The difference between this report and the preceding ones is so great that any effort to compare the data would be futile except in a few cases.

Strikes in 1904.—During the year 1904 there were 840 strikes, of which 208 were agricultural and 632 occurred in other industries. The 208 strikes among agricultural workers involved a total of 94,756 strikers, and the 630 strikes in other industries (data for 2 strikes not being available) involved 118,356, making a total of 213,112 strikers. The number of strikes and strikers by industries is shown in the following table, in which the 44 industries given in the report have been reduced to 17 groups to conform as nearly as possible to the classification of the preceding years.

STRIKES AND STRIKERS, BY INDUSTRIES, 1904.

Industry.	Strikes.	Strikers.
Agriculture.....	208	94,756
Mining and quarrying.....	63	23,006
Foundry products, machinery, apparatus, and shipbuilding.....	65	4,422
Precious-metal working.....	4	578
Stone, clay, and glass.....	45	6,701
Building and engineering work.....	100	30,793
Chemical products.....	20	1,344
Woodwork, furniture, baskets, etc.....	21	1,202
Paper.....	6	125
Printing.....	13	242
Textiles.....	130	20,040
Clothing, hats, straw goods.....	20	1,798
Hides and shoes.....	27	1,202
Food products.....	54	10,528
Fishing.....	2	499
Transportation.....	23	8,192
Public utilities and monopolies.....	37	6,990
Total.....	838	• 213,112

* The number of strikers in industries other than agriculture is given in the report as 118,356. This number, although 25 in excess of the sum of the items here shown for those industries, has been used in determining the total strikers for all industries.

The greatest number of strikes occurred among agricultural workers, 24.8 per cent of all strikes and 44.5 per cent of all strikers being found in that industry. In building and engineering work and in mining and quarrying the number of strikers totaled 14.4 per cent and 11.1 per cent, respectively, of the entire number reported. In the textile industries the number of strikes represented 15.5 per cent and the number of strikers 9.4 per cent of the total number. The following table shows, for the agricultural and for the other industries, separately, the results of strikes, arranged according to principal causes:

STRIKES, BY CAUSES AND RESULTS, 1904.

[Strikes due to two or more causes have been tabulated under each cause; hence the totals for this table do not agree with those for the preceding table and the second table on page 573.]

Cause or object.	Agricultural occupations.					Other industries.				
	Suc-ceeded.	Suc-ceeded partly.	Failed.	Not re-ported.	Total.	Suc-ceeded.	Suc-ceeded partly.	Failed.	Not re-ported.	Total.
For increase of wages....	38	40	31	2	110	89	128	101	3	321
Against reduction of wages.....	6	2	1	.....	9	17	12	23	.....	52
For reduction of hours.....	19	18	29	1	67	24	21	24	.....	69
Against increase of hours.....	1	3	1	.....	5	3	5	6	.....	14
Other causes.....	36	13	39	9	97	103	62	142	8	315
Total.....	100	85	101	12	298	236	228	296	11	771

Questions of wages were the most frequent causes of strikes in 1904, in agricultural occupations 43.3 per cent and in other industries 48.4 per cent of all strikes being due wholly or in part to this cause. The demand for reduction of hours occasioned 22.5 per cent of the strikes among agricultural workers and 8.9 per cent of those among employees in other industries. The distribution of causes of strikes among the

various groups of industries other than agricultural is shown in the following table:

STRIKES, BY INDUSTRIES AND CAUSES, 1904.

[Strikes due to two or more causes have been tabulated under each cause; hence the totals for this table do not agree with those for the following table and the first table on page 572.]

Industry.	For increase of wages.	Against reduction of wages.	Other causes affecting wages.	For reduction of hours.	Other causes affecting hours.	Against discharge and other punishments.	For discharge of superintendents, etc.	Other causes.	Total.
Mining and quarrying	47	3	5	3	1	2	1	19	81
Foundry products, machinery, apparatus, and shipbuilding ..	30	4	3	9	2	14	2	16	80
Precious-metal working	1	.....	.....	1	1	1	.....	5	9
Stone, clay, and glass	32	5	1	2	2	5	1	4	52
Building and engineering work ..	58	4	6	20	12	1	1	13	115
Chemical products	9	1	3	3	.....	5	2	2	25
Woodwork, furniture, baskets, etc.	8	2	.....	.....	1	3	2	7	23
Paper	2	2	1	1	.....	1	.....	1	8
Printing	5	.....	.....	2	.....	6	.....	1	14
Textiles	45	19	7	11	13	22	14	25	156
Clothing, hats, straw goods	6	3	4	.....	3	3	2	3	24
Hides and shoes	12	3	2	4	1	2	1	8	33
Food products	32	2	2	5	2	7	2	19	71
Fishing	1	.....	.....	.....	.....	1	.....	.....	2
Transportation	13	3	1	.....	.....	1	1	5	24
Public utilities and monopolies ..	20	1	.....	8	2	9	5	9	54
Total	321	52	35	69	40	83	34	137	771

In the following table are shown, as far as data are available, the number of working days lost, the aggregate loss in wages, and the amount of strike benefits paid in strikes in all industries other than agriculture during 1904:

DAYS OF WORK LOST, WAGE LOSS, AND AMOUNT OF BENEFITS PAID IN STRIKES 1904, BY INDUSTRIES.

Industry.	Total strikes.	Strikes for which aggregate days lost was reported.	Aggregate days lost.	Strikes for which total wage loss was reported.	Total wage loss.	Strikes in which—		Amount of strike benefits paid.
						Strike benefits were paid.	Amount of strike benefits was reported.	
Mining and quarrying	63	61	247,376	43	\$62,543.79	6	3	\$1,173.44
Foundry products, machinery, apparatus, and shipbuilding ..	65	64	70,315	58	18,860.64	17	12	3,873.92
Precious-metal working	4	4	27,922	4	13,064.83	3	2	219.06
Stone, clay, and glass	45	44	124,531	38	40,237.05	8	6	2,731.34
Building and engineering work ..	100	97	229,504	82	90,698.73	13	8	2,306.45
Chemical products	20	19	9,243	15	2,640.39	2	2	96.50
Woodwork, furniture, baskets, etc.	21	21	18,578	18	7,903.70	5	3	311.70
Paper	6	6	882	6	233.47	2	2	36.48
Printing	11	11	3,682	11	1,708.49	3	2	27.52
Textiles	130	128	247,480	60	36,749.44	9	6	1,322.56
Clothing, hats, straw goods	20	20	52,374	18	14,255.35	5	4	329.45
Hides and shoes	27	26	18,861	24	10,439.11	10	6	971.47
Food products	54	54	205,686	51	83,205.89	14	8	13,867.58
Fishing	2	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transportation	23	23	80,901	16	44,887.54	4	4	50.57
Public utilities and monopolies ..	37	37	30,846	31	5,715.24	2	2	1,241.22
Total	630	615	1,368,181	475	433,193.66	103	70	28,559.56

(a) Not reported.

In the 615 strikes for which the facts were reported, the total number of working days lost was 1,368,181, or an average of 2,225 days each. The aggregate wage loss in 475 strikes was \$433,193.66, or \$911.99 for each strike. Strike benefits were paid in the case of 70 strikes, the average amount per strike being \$407.99.

RUSSIA.

Svod Otchetov Fabrichnykh Inspectorov za 1904 god (Digest of reports of factory inspectors for 1904). Published by Otdiel promyshlennosti, Ministerstvo trgovli i promyshlennosti (Bureau of Industry of the Ministry of Commerce and Industry). 1907. pp. xv, 212.

Annual digests of the reports of the factory inspectors have been published by the Russian Government since 1900. The one under consideration is the fifth in the series. In addition to the accounts of the administrative activities of the inspectors, the reports contain many important annual data concerning the manufactures of Russia, such as the number of establishments and employees, the number of women and children employed, idle establishments, strikes, industrial accidents, wages, etc. The data refer only to those establishments and industries which are subject to factory inspection, as stated on page 978 of Bulletin 76.

At the beginning of the year 1904 there were subject to inspection 15,375 establishments with 1,684,334 employees, and at the end of the year 14,700 establishments with 1,663,080 employees. The decrease was mainly due to the closing of 745 establishments with 28,744 employees. The closed establishments were mostly of the smaller type, with an average of 38.6 employees, so that the average number of employees per establishment increased from 109.6 in the beginning of the year to 113.1 at its close.

The following table gives the number of the industrial establishments grouped by the number of workmen employed:

NUMBER AND PER CENT OF ESTABLISHMENTS AND EMPLOYEES, BY SIZE OF ESTABLISHMENTS, AT THE END OF 1904.

Persons employed per establishment.	Establishments.		Employees.		Average number of employees per establishment.
	Number.	Per cent.	Number.	Per cent.	
20 or less.....	5,349	36.4	63,598	3.8	11.9
21 to 50.....	4,802	31.3	151,785	9.1	33.0
51 to 100.....	2,063	14.0	146,642	8.8	71.1
101 to 500.....	2,042	13.9	445,955	26.0	223.2
501 to 1,000.....	393	2.7	273,791	16.5	696.7
Over 1,000.....	251	1.7	551,306	33.8	2,236.3
Total.....	14,700	100.0	1,663,080	100.0	113.1

It appears that while the majority of the establishments are of the smaller type, 81.7 per cent of them containing 100 working-

men or less, and 67.7 per cent, 50 workingmen or less, the majority of the factory employees worked in large establishments, 78.3 per cent in those employing over 100 workers and 50.3 per cent in those employing more than 500 workers.

The distribution of the factory employees by sex and by age groups at the beginning and at the end of the year is shown in the following table:

NUMBER AND PER CENT OF EMPLOYEES, BY SEX AND AGE GROUPS, AT BEGINNING AND END OF THE YEAR 1904.

Age group and sex.	Employees at beginning of the year.		Employees at end of the year.		Increase (+) or decrease (—).
	Number.	Per cent.	Number.	Per cent.	
Adults (over 17):					
Males.....	1,109,024	65.8	1,095,387	65.9	—13,637
Females.....	388,442	23.1	390,848	23.5	+ 2,406
Total.....	1,497,466	88.9	1,486,235	89.4	—11,231
Young persons (15 to 17, inclusive):					
Males.....	97,479	5.8	93,992	5.6	— 3,487
Females.....	61,298	3.6	57,906	3.5	— 3,332
Total.....	158,777	9.4	151,958	9.1	— 6,819
Children (12 or under 15):					
Males.....	16,363	1.0	15,174	.9	— 1,189
Females.....	11,728	.7	9,713	.6	— 2,015
Total.....	28,091	1.7	24,887	1.5	— 3,204
All employees:					
Males.....	1,222,966	72.6	1,204,553	72.4	—18,313
Females.....	461,468	27.4	458,527	27.6	— 2,941
Total.....	1,684,334	100.0	1,663,080	100.0	—21,254

In Russian industrial statistics it is customary to differentiate three age groups: Adults over 17 years of age, young persons from 15 to 17 years, and children from 12 to 15 years. The table shows that at the end of the year adult women constituted 23.5 per cent of the total number of employees, young persons of both sexes 9.1 per cent, and children below 15 years of age 1.5 per cent. During the year there was an increase of adult women and a decrease of young persons and children of both sexes.

During the year, 69,697 accidents were reported to the factory inspectors; of these, 67,098, or 96.27 per cent, were slight in their nature, 2,204, or 3.16 per cent, were serious, and 395, or 0.57 per cent, were fatal. The data are particularly interesting, since the year 1904 was the first year of the operation of the Workingmen's Compensation Act of June 2 (15), 1903,^(a) which requires complete reports of all industrial accidents. In the preceding year only 35,138 accidents were reported.

The factory inspectors are required to present complete reports on the amount of fines which the Russian factory code permits the employers to impose upon the employees for the following three causes:

^a See Bulletin 58, pp. 955-959.

Faulty work, unexcused absences, and breach of the factory rules or disturbance of peace.

The number of fines, the total amount collected in fines, and the average amount per fine, per employee, and per \$100 in wages, for the years 1901 to 1904 are shown in the following table:

FINES COLLECTED, 1901 TO 1904.

Year.	Working-men in establishments where fines are imposed.	Number of fines imposed.		Amount collected in fines.			
		Total.	Per 100 workers.	Total.	Average per fine.	Average per employee in establishments.	Per \$100 wages paid.
1901.....	1,222,382	2,372,283	194	\$285,846	\$0.120	\$0.233	\$0.225
1902.....	1,233,737	2,815,572	228	272,674	.097	.222	.212
1903.....	1,254,528	2,930,205	234	271,628	.093	.216	.194
1904.....	1,261,311	2,903,172	230	276,012	.095	.219	.199

The next table shows the number of fines levied, the total amount of fines collected, and the average amount per fine in 1904, classified according to the reasons for which the fines were levied:

NUMBER OF FINES AND AMOUNT COLLECTED, BY CAUSES OF FINES, 1904.

Fines levied on account of—	Number of cases.	Total amount collected in fines.	Average amount of each fine.
Faulty work.....	2,155,108	\$126,797	\$0.059
Unexcused absence.....	416,960	104,531	.251
Breach of rules or disturbance of peace.....	331,044	44,684	.135
Total.....	2,903,172	276,012	.095

The largest number of fines in 1904, or 74.2 per cent, were imposed for faulty work, the average amount levied being very small, namely, less than 6 cents. The fines levied for other reasons are less frequent, but greater in amount. According to the Russian factory law, the sums collected in fines can be used only for the relief of the factory employees in cases of permanent or temporary disability resulting from illness or accidents, in cases of confinement, for funeral expenses, for loss of property of employees through fire or other causes, or for cases of need. The number of cases relieved and the total and average amounts granted in 1904 are shown in the following table:

DISPOSITION OF AMOUNTS COLLECTED IN FINES, BY CHARACTER OF RELIEF GRANTED, 1904.

Character of relief granted.	Cases of relief.	Amount of relief.	
		Total.	Per case.
Permanent disability.....	7,014	\$45,106	\$6.43
Temporary disability resulting from illness.....	34,311	91,784	2.68
Confinement.....	22,301	38,189	1.71
Funeral expenses.....	18,174	50,580	2.78
Loss of property through fire or other causes.....	4,241	25,266	5.96
All other objects.....	6,179	25,052	4.05
Total.....	92,220	275,977	2.99

DECISIONS OF COURTS AFFECTING LABOR.

[Except in cases of special interest, the decisions here presented are restricted to those rendered by the Federal courts and the higher courts of the States and Territories. Only material portions of such decisions are reproduced, introductory and explanatory matter being given in the words of the editor. Decisions under statute law are indexed under the proper headings in the cumulative index, page 633 et seq.]

DECISIONS UNDER STATUTE LAW.

EMPLOYERS' LIABILITY—EMPLOYMENT OF CHILDREN IN VIOLATION OF STATUTE—REMEDIES—NEGLIGENCE—*Stehle et al. v. Jaeger Automatic Machine Company, Supreme Court of Pennsylvania, 69 Atlantic Reporter, page 1116.*—George Stehle, an infant, sued by his next friend, George Stehle, the latter suing also in his own right, to recover damages for injuries received by the former while in the employment of the company named. The verdict was for the company in the court of common pleas of Philadelphia County, which judgment was, on appeal, reversed, and a new trial ordered.

The grounds for reversal appear in the opinion, which was delivered by Judge Elkin, and which reads as follows:

The error which ran through the whole trial in the court below was failure to give effect to the act of May 2, 1905 (P. L. 352). The case was tried under the rules of law applicable to cases of negligence where master and servant, both being competent to enter into a contract of employment and each presumably capable of appreciating the dangers thereof, are charged with the duty of exercising due care, the master in providing reasonably safe appliances and machinery, and the servant of using ordinary care to avoid open and obvious dangers. These rules have no application to the facts of the present case. The boy appellant was born June 6, 1892, was first employed by appellee company in April, 1905, and was injured January 27, 1906, being at the time of the injury under 14 years of age. Section 2 of the act of 1905 provides that no child under 14 years of age shall be employed in any establishment to which the provisions of the statute apply, and section 4 requires that "no minor under sixteen years of age shall be permitted to clean or oil machinery while in motion or to operate, or otherwise have the care or custody of, any elevator or lift." It seems to be conceded that the place where the boy worked was an establishment within the meaning of the act, and hence the case must be considered in the light of the statute regulations and requirements. That the legislature, under its police power, has the authority to enact such legislation, is not an open question in this State. In the recent case of *Lenahan v. Pittston Coal Mining Company* (218 Pa. 311, 67 Atl. 642 [Bulletin No. 74, p. 239]), we held

that it was within the power of the legislature to fix an age limit below which children should not be employed in dangerous kinds of work, and that an employer who violated the law by engaging a child under the statutory age did so at his own risk, and in an action of trespass for personal injuries sustained in such employment the master can not set up as a defense either the assumption of risk or the contributory negligence of the child servant. This seems to be the rule adopted by the courts of other jurisdictions as well as our own. (*Sipes v. Michigan Starch Company*, 137 Mich. 258, 100 N. W. 447.)

The suggestion made by the learned counsel for appellee that a violation of section 2, which prohibits the employment of children under 14 years of age, can only be punished as a misdemeanor as provided in section 23, can not be accepted as a sound rule of law. It is true the statute is penal, and violations of its provisions, upon conviction, are punishable by fine or imprisonment, but these remedies are not exclusive, and do not supersede the right of action for damages in a civil proceeding. (*Narramore v. Railway Company*, 96 Fed. 298, 37 C. C. A. 499 [Bulletin No. 26, p. 202].) Whether the employment of a child in a hazardous occupation, when such employment is prohibited by law, is negligence per se, or only evidence of negligence to be considered in connection with other facts tending to show negligence, the authorities are not entirely agreed, but, for the purpose of the present case, we hold that the employment of the boy under 14 years of age to do any kind of work in the establishment prohibited by section 2, and of his having been employed to clean or oil machinery while in motion, prohibited by section 4, were both questions of fact to be submitted to the jury as evidence of negligence, and, if the injury resulted by reason of the employment prohibited by law, there can and should be a recovery in the case. In the view thus taken of the act of 1905, it is not important to consider the assignments of error relating to the duty of an employer to properly instruct a young and inexperienced employee in the use of dangerous machinery. As to the prohibited employment the master is not relieved by giving instructions.

We do not consider it necessary to consider in detail the numerous assignments of error, because they nearly all relate wholly or in part to the force and effect to be given the act of 1905, and, with this fundamental and controlling question now settled, no difficulty will be experienced in the proper application of the rules of law applicable thereto when the case is again tried.

Judgment reversed, and a venire facias de novo awarded.

EMPLOYERS' LIABILITY—RAILROAD COMPANIES—SAFETY APPLIANCE LAW—DELEGATION OF LEGISLATIVE POWER—CONSTRUCTION OF STATUTE—DUTY AS TO MAINTENANCE OF PRESCRIBED CONDITION—*St. Louis, Iron Mountain and Southern Railway Company v. Taylor*, Supreme Court of the United States, 28 Supreme Court Reporter, page 616.—George W. Taylor, a brakeman in the employ of the company named, was killed while attempting to couple cars, and his administratrix sued to recover damages for his death. The right to recover was based solely

on the failure of the railroad company to equip the cars in question with drawbars conforming to the safety appliance law of March 2, 1893. Judgment was for the plaintiff in the circuit court of Crawford County, Ark., and, on appeal, in the supreme court of the State. This judgment was reversed in the Supreme Court of the United States because of faulty instructions given by the court below as to the construction of the regulations fixing the height of drawbars, while as to other points the contentions of the railroad company were denied.

The opinion of the court was delivered by Justice Moody, who, after disposing of the question of jurisdiction, took up the provision of the law that authorized the American Railway Association to designate to the Interstate Commerce Commission the standard height of drawbars for freight trains and the maximum variation allowable between the drawbars of empty and loaded cars. The height was fixed by the Association and promulgated by the Commission at 34½ inches from the top of the rails to the center of the drawbars for cars on standard gauge railroads, with a maximum variation of 3 inches between the drawbars of empty and loaded cars. The company attacked this provision of the law as being an unconstitutional delegation of legislative power, as to which contention Justice Moody said:

Nothing need be said upon this question except that it was settled adversely to the contention of the plaintiff in error in *Buttfield v. Stranahan* (192 U. S. 470, 48 L. Ed. 525, 24 Sup. Ct. Rep. 349)—a case which, in principle, is completely in point.^(a)

The next point considered turned on the instructions as to the prescribed height of the drawbars. The court below gave the proper statement that the height for an empty car should be 34½ inches, but added that for loaded cars there should be a uniform height of 31½ inches, and that if such was shown not to be the case, the defendant was negligent. One of the cars to be coupled was fully, and the other lightly, loaded. One had an automatic coupler and the other a link and pin coupler, the law at the time not requiring all cars to be provided with the automatic coupler. The question turned on the height of the drawbars, as to which the testimony was conflicting. Speaking of the force of the regulation and its construction by the court below, Mr. Justice Moody said:

We think that it requires that the center of the drawbars of freight cars used on standard-gauge railroads shall be, when the cars are empty, 34½ inches above the level of the tops of the rails; that it permits, when a car is partly or fully loaded, a variation in the height

^a The case cited was one in which a law authorizing the Treasurer of the United States to appoint a board of tea experts who should classify teas imported into the United States, and to adopt such classification in the collection of duties, etc., was held valid.

downward, in no case to exceed 3 inches; that it does not require that the variation shall be in proportion to the load, nor that a fully-loaded car shall exhaust the full 3 inches of the maximum permissible variation and bring its drawbars down to the height of $31\frac{1}{2}$ inches above the rails. If a car, when unloaded, has its drawbars $34\frac{1}{2}$ inches above the rails, and, in any stage of loading, does not lower its drawbars more than 3 inches, it complies with the requirements of the law. If, when unloaded, its drawbars are of greater or less height than the standard prescribed by the law, or if, when wholly or partially loaded, its drawbars are lowered more than the maximum variation permitted, the car does not comply with the requirements of the law.

The clear intentment of these instructions was that the law required that the drawbars of a fully-loaded car should be of the height of $31\frac{1}{2}$ inches, and that if either of the cars varied from this requirement the defendant had failed in the performance of its duty. We find nothing in the remainder of the charge which qualifies this instruction, and we think it was erroneous. We should be reluctant to insist upon mere academic accuracy of instructions to a jury. But how vitally this error affected the defendant is demonstrated by the fact that its own evidence showed that the drawbar of the fully-loaded car was $32\frac{1}{2}$ inches in height. Under these instructions the plaintiff was permitted to recover on proof of this fact alone. From such proof a verdict for the plaintiff would logically follow. The error of the charge was emphasized by the refusal to instruct the jury, as requested by the defendant, "that when one car is fully loaded and another car in the same train is only partially loaded, the law allows a variation of full 3 inches between the center of the drawbars of such cars, without regard to the amount of weight in the partially-loaded car." This request, taken in connection with the instruction that the drawbars of unloaded cars should be of the height prescribed by the act, expressed the true rule, and should have been given.

The last question considered related to the duty devolved upon the company by the rule requiring the limits of the variation named to be observed, which was disposed of by holding the duty to be an absolute one, requiring actual performance, and that the employer was not relieved by proof of reasonable care. On this point the court said:

The evidence showed that drawbars which, as originally constructed, are of standard height, are lowered by the natural effect of proper use; that, in addition to the correction of this tendency by general repair, devices called "shims," which are metallic wedges of different thickness, are employed to raise the lowered drawbar to the legal standard; and that, in the caboose of this train, the railroad furnished a sufficient supply of these shims, which it was the duty of the conductor or brakeman to use as occasion demanded. On this state of the evidence the defendant was refused instructions, in substance, that, if the defendant furnished cars which were constructed with drawbars of a standard height, and furnished shims to competent inspectors and trainmen, and used reasonable care to keep the drawbars at a reasonable height, it had complied with its statutory duty, and, if the lowering of the drawbar resulted from the failure to use the shims, that was the negligence of a fellow-servant, for which

the defendant was not responsible. In deciding the questions thus raised, upon which the courts have differed (*St. Louis & S. F. R. Co. v. Delk*, 158 Fed. 931), we need not enter into the wilderness of cases upon the common-law duty of the employer to use reasonable care to furnish his employee reasonably safe tools, machinery, and appliances, or consider when and how far that duty may be performed by delegating it to suitable persons for whose default the employer is not responsible. In the case before us the liability of the defendant does not grow out of the common law duty of master to servant. The Congress, not satisfied with the common law duty and its resulting liability, has prescribed and defined the duty by statute. We have nothing to do but to ascertain and declare the meaning of a few simple words in which the duty is described. It is enacted that "no cars, either loaded or unloaded, shall be used in interstate traffic which do not comply with the standard." There is no escape from the meaning of these words. Explanation can not clarify them, and ought not to be employed to confuse them or lessen their significance. The obvious purpose of the legislature was to supplant the qualified duty of the common law with an absolute duty, deemed by it more just. If the railroad does, in point of fact, use cars which do not comply with the standard, it violates the plain prohibitions of the law, and there arises from that violation the liability to make compensation to one who is injured by it. It is urged that this is a harsh construction. To this we reply that, if it be the true construction, its harshness is no concern of the courts. They have no responsibility for the justice or wisdom of legislation, and no duty except to enforce the law as it is written, unless it is clearly beyond the constitutional power of the lawmaking body. It is said that the liability under the statute, as thus construed, imposes so great a hardship upon the railroads that it ought not to be supposed that Congress intended it. Certainly the statute ought not to be given an absurd or utterly unreasonable interpretation, leading to hardship and injustice, if any other interpretation is reasonably possible. But this argument is a dangerous one, and never should be heeded where the hardship would be occasional and exceptional. It would be better, it was once said by Lord Eldon, to look hardship in the face rather than break down the rules of law. But when applied to the case at bar the argument of hardship is plausible only when the attention is directed to the material interest of the employer to the exclusion of the interests of the employee and of the public. Where an injury happens through the absence of a safe drawbar there must be hardship. Such an injury must be an irreparable misfortune to some one. If it must be borne entirely by him who suffers it, that is a hardship to him. If its burden is transferred, as far as it is capable of transfer, to the employer, it is a hardship to him. It is quite conceivable that Congress, contemplating the inevitable hardship of such injuries, and hoping to diminish the economic loss to the community resulting from them, should deem it wise to impose their burdens upon those who could measurably control their causes, instead of upon those who are, in the main, helpless in that regard. Such a policy would be intelligible, and, to say the least, not so unreasonable as to require us to doubt that it was intended, and to seek some unnatural interpretation of common words. We see no error in this part of the case. But, for the reasons before given, the judgment must be reversed.

EMPLOYERS' LIABILITY — RAILROAD COMPANIES — VALIDITY OF FEDERAL STATUTE IN THE DISTRICT OF COLUMBIA—DAMAGES—*Hyde v. Southern Railway Company, Court of Appeals of the District of Columbia, 36 Washington Law Reporter, page 374.*—This case was before the court of appeals for a decision as to the constitutionality of the Federal liability law of 1906 in its application to employees of common carriers in the District of Columbia. This law was declared unconstitutional by the Supreme Court of the United States, in so far as it related to commerce between the different States. (Howard v. Railroad Company, 28 Sup. Ct. 141; see Bulletin No. 74, p. 216.) In the case in hand, however, it was held by the court of appeals that as the Congress of the United States had plenary power to legislate for the District of Columbia and the Territories, any decision as to the validity or nonvalidity of the law as to other localities did not affect the question as it relates to the District, and the law was declared to be in effect in this jurisdiction.

The title of the act is "An Act relating to liability of common carriers in the District of Columbia and Territories and common carriers engaged in commerce between the States and between the States and foreign nations to their employees." Similar language is used in the opening clauses of section 1 of the law. (For the law in full see Bulletin No. 74, pp. 216, 217.)

After quoting the title and first section of the law, and announcing the ruling of the Supreme Court, Chief Justice Shepard, speaking for the court of appeals, said:

We think it is evident from the language of the title and the first clauses of section 1 of the act that, in its enactment, Congress contemplated the exercise of its plenary power in the District of Columbia and the Territories, and of only its limited power in the States. This general intention, as regards the latter, was thwarted by the use of language, appropriate to the exercise of its plenary power, but not to the exercise of its limited power, making the common carrier, who might also be engaged in interstate commerce, liable to "any of its employees," without discrimination in respect of the character of the business in the conduct of which the injury might occur. We do not think, however, that the purpose to make the new rule of law, defining the relations of master and servant, apply to "every common carrier engaged in trade or commerce in the District of Columbia or in any Territory of the United States," is made abortive by the next clause making it apply also to common carriers engaged in commerce among the several States. This second clause or provision can be eliminated without impairing the particular effect or changing the meaning of the first in any particular.

The provisions of the section being deemed severable, the next question is, whether it is plain that Congress would have enacted the act with the unconstitutional provision eliminated? We see no reason to doubt that it would have done so. One of the special duties of Congress is to legislate generally for the benefit of the inhabitants of the District of Columbia and the Territories. That

duty in respect of the adequate protection of the employees of common carriers engaged in trade or commerce therein, is in no wise dependent upon its performance in respect of the limited class of employees subject to its jurisdiction in the several States. The latter may be, and are in great measure, protected by State legislation. They have another power to appeal to for their relief, while those in the District of Columbia have not.

The action was brought to recover damages in the amount of \$20,000 on account of the death of the intestate, and the question consequently arose whether such an amount could be awarded, since section 1301 of the Code of the District of Columbia, giving a right of action for injuries causing death, limited the amount recoverable under said section to \$10,000. The court held that limitation of the code section did not apply to the liability law, saying that—

The objects of the two [statutes] are different. The first remedies a defect in the common law by conferring a right of action in all cases of injuries resulting in death, when, had the injured party survived, he would be entitled to an action, and in no other. The second changes the common law in relation to master and servant by giving the latter a right of action for *all damages* for injuries occasioned by the negligent acts of fellow-servants, and modifies the law as to the contributory negligence of the injured person. It then extends this right of action, in case of death, to the personal representative of the deceased. The damages so recovered are distributed in a different manner from that provided in the earlier law, and are not expressly discharged of the debts or liabilities of the deceased as therein provided. The third section relates to employment contracts, insurance, relief benefits, etc., not mentioned in the Code, and provides a measure of set-off growing out of the same. Moreover, the act operates alike in the several Territories, where it does not appear that there is any statute limiting the amount of recovery.

Notwithstanding the invidious distinction made between the beneficiaries of the separate statutes in respect of the amount of the recovery, we see no reason why they may not stand together and operate according to their terms in cases coming under them respectively. In conferring a right of action where none existed at common law, Congress can couple the grant with any condition it may deem reasonable in the particular case, and is not bound to affix the same condition to all similar grants. Instead of intending to bring the parties to actions created by the act, under the operation of section 1301 of the Code, we think that the intention was to give it operation according to its terms. It makes complete provision for all of its purposes, and leaves nothing to be supplied by the provisions of the Code. Each is to be construed, therefore, as applying to cases arising under it, and to none other.

EMPLOYER'S LIABILITY—RAILROAD COMPANIES—VALIDITY OF FEDERAL STATUTE IN THE TERRITORIES AND THE DISTRICT OF COLUMBIA—*Atchison, Topeka and Santa Fe Railway Company v. Mills*, Court of Civil Appeals of Texas, 108 Southwestern Reporter, page 480.—I. L.

Mills, an employee of the company named, had sued in the district court of El Paso County and recovered damages for injuries received in the course of his employment in the Territory of New Mexico. The case is of interest only as it presents a ruling as to the validity of the Federal liability law of 1906 in its application to railroads in Territories. Judge Fly, speaking for the court, held that the judgment of the Supreme Court in the Howard case (28 Sup. Ct. 141; see Bulletin No. 74, p. 216) was to the effect that the law was invalid in all respects and as to all places, as appears from the following extracts from his opinion:

While the act was declared unconstitutional and invalid because it was an invasion of the rights of the States, yet it was declared to be invalid, not only as to the States, but also as to the Territories and the District of Columbia. In the opinion of the court, delivered through Mr. Justice White, it was shown that the parts of the act were so blended and interwoven that if one part was unconstitutional the whole act was destroyed. In concluding the opinion of the court Mr. Justice White said: "Concluding as we do that the statute, whilst it embraces subjects, within the authority of Congress, to regulate commerce, also includes subjects not within its constitutional power, and that the two are so interblended that they are incapable of separation, we are of the opinion that the courts below rightly held the statute to be repugnant to the Constitution and nonenforceable." The two subjects referred to as being interblended mean of course the constitutional and unconstitutional parts of the statute, and must refer to that part of the law relating to the territories and the District of Columbia and that part relating to the States.

Courts have no means of knowing that Congress would have passed the law in question, and made it applicable to the District of Columbia and the Territories alone, and to strike out portions of a section of the act to make it conform to that hypothesis would be making, by judicial construction, a law which Congress did not make.

EMPLOYMENT OF CHILDREN—AGE LIMIT—CONSTITUTIONALITY OF STATUTE—VIOLATION—EMPLOYMENT AS CAUSE OF INJURY—*Starnes v. Albion Manufacturing Company, Supreme Court of North Carolina, 61 Southeastern Reporter, page 525.*—Harry Starnes was employed in a cotton mill as a sweeper in the spinning room, and was injured while visiting his father, who worked at a carding machine in the same establishment. He was less than 10 years of age when the accident causing his injury occurred, and his employment was in violation of section 3362 of the Revisal of 1905, which prohibits the employment in factories of children under 12 years of age. Damages for injuries were awarded in the superior court of Mecklenburg County, from which judgment the company appealed, basing its action on three grounds: First, that the law deprives the citizen of his property rights without due process of law, and denies to certain citizens the equal protection of the law; second, that it was error for the court

to charge that employment in violation of the act was negligence per se; and third, that the court had improperly refused to instruct that unless the child was injured while engaged in the work for which he was hired the employer was not liable.

None of these grounds was allowed by the supreme court, and the judgment of the court below was affirmed. The position of the court on each of the points involved is set forth in the following extracts from its opinion, as delivered by Judge Brown:

Child labor laws have been adopted in nearly all the States of this Union and Canada, and are in force in nearly all the governments of Europe and of the Australian Continent. They are founded upon the principle that the supreme right of the State to the guardianship of children controls the natural rights of the parent, when the welfare of society or of the children themselves conflict with parental rights. In this country their constitutionality, so far as we can ascertain, has never been successfully assailed. The supervision and control of minors is a subject which has always been regarded as within the province of the legislative authority. How far it shall be exercised is a question of expediency, which it is the province of the legislature to determine.

The constitutional guaranty of the liberty of contract does not apply to children of tender years nor prevent legislation for their protection. "So far as such regulations control and limit the powers of minors to contract for labor, there has never been," says Mr. Tiedmann, "and never can be, any question as to their constitutionality. Minors are the wards of the nation, and even the control of them by parents is subject to the unlimited supervisory control of the State." (1 Tiedmann, State & Fed. Con., p. 325.)

The statute we are considering appears to have been framed in good faith, and for the purpose of promoting the general welfare by protecting minors from injury by overwork, from liability to injury by machinery in large manufacturing plants and by facilitating their attendance at schools. It is not an undue restriction of the right of the parent to the labor of the child, assuming that he has such rights, when opposed to the general welfare. It does not close to him all fields of employment for his child, but only those in factories and manufacturing establishments, where the child is more likely to be injured in health or body, or from his childish carelessness, as in this case, than in many other useful employments.

The right to the labor of the child is not a vested right in the parent, nor is it of any more importance than the right to control its education. Both are subject to the paramount power of the State when it deems it necessary to exercise it for the general good. Upon this idea compulsory education laws have been enacted in a large number of States and their constitutionality has been sustained where drawn in question.

As to the second contention, it is decided squarely against the defendant in the recent case of *Leathers v. Tobacco Co.*, 144 N. C. 330, 57 S. E. 11 [Bulletin No. 71, p. 373], where it is held not only that a cause of action accrues to the child, if injured, but that it is negligence per se, and not merely evidence of negligence, to violate the statute. The writer can add nothing to the well-considered

opinion of Mr. Justice Connor in that case, and we find nothing in the well-prepared brief of defendant which induces us to reverse it.

This brings us to consider defendant's third contention, a matter not fully determined in the Leathers Case, and which may be thus stated: That the plaintiff can not recover because the employment of him, although willfully and knowingly done in violation of the statute, was not the proximate cause of his injury, inasmuch as he did not receive the injury while in the discharge of the duties to which he was assigned. It is true that the plaintiff was not engaged in performing his duties in the spinning room, and had gone to the lower floor where the carding machines were, and got his hand caught in one and badly cut. Under such circumstances there are respectable courts which hold that the injury is not the proximate result of a violation of the statute, because not received in performing the work the child was assigned to do, and that therefore the employer is not liable. We are not impressed with the persuasive authority of those precedents, and are not inclined to follow them. To do so, would, in our opinion, unduly restrict the liability of the employer, and would be contrary to the evident intention of the legislature. The act was designed not only to protect the health, but the safety, of children of tender age from the indiscretion and carelessness characteristic of immature years. One who knowingly and willfully violates its provisions is not only guilty of an indictable offense, but he commits a tort upon the rights of the child and should be judged as a culpable wrongdoer, and not as one guilty of mere negligence. The injury done the child is a willful wrong and does not flow from the negligent performance of a lawful act. We think that the breach of the statute constitutes actionable negligence wherever it is shown that the injuries were sustained as a consequence of the wrongful employment of the child in the factory in violation of the law. In this case we think there is a direct causal connection between the unlawful employment of the plaintiff and the injuries sustained by him. By employing this boy of 10 years in violation of the law, the defendant exposed him to perils in its service which, though open to observation, he, by reason of his youth and inexperience, could not fully understand and appreciate.

INJUNCTION—STRIKES—PICKETING—PROTECTION OF EMPLOYEES AS MEMBERS OF LABOR ORGANIZATIONS—CONSTITUTIONALITY OF STATUTE—AGREEMENTS BETWEEN MINE OWNERS—CONSPIRACY—EVIDENCE—*Goldfield Consolidated Mines Company v. Goldfield Miners' Union, No. 220, et al., United States Circuit Court, District of Nevada, 159 Federal Reporter, page 500.*—The Goldfield Consolidated Mines Company is a Wyoming corporation which owns mines in the Goldfield district, besides owning about 97 per cent of the stock in a number of other mine corporations, the mines of which it operates, together with its own, for the benefit of all parties in interest. The Goldfield Miners' Union is an unincorporated association of perhaps 2,000 members, and is a branch of the Western Federation of Miners, likewise a voluntary, unincorporated association. The complainant company charged that the miners' union, though

claiming to be a labor organization, is a criminal society, organized to agitate certain so-called political questions, tending by its attitude and activities to subvert the general principles of government, and maintaining as one of its cardinal principles that there shall be a continuous state of warfare between employers and employees. It was further alleged that the union encouraged employees to take the property of employers by stealth and force, and, if the demands of employees be not complied with, to destroy the property of the employers. Unreasonable demands enforced by threats, boycotts, picketing, assaults, deportations, etc., were included in the charges, and a preliminary injunction was asked for to prevent interference with the operation of the mines, the intimidation of employees, congregating on and picketing the company's works, and the maintenance of a boycott against the company, its agents, or employees; also prohibiting the holding or attending of any meeting of the Goldfield Miners' Union.

The charges made were denied in detail, and the company itself was charged with violating the provisions of the constitution of Wyoming against consolidations and combinations to prevent competition. It was also alleged that this and other companies had conspired to oppress, boycott, and drive out the members of the Western Federation of Miners, and that the present strike was due to the fact that the members of the union were unwilling to accept depreciated paper in lieu of money for wages.

The opinion of the court was preceded by a lengthy statement of facts setting forth the conditions at the mines for the year preceding the rise of the present cause of action. It was sworn to and not denied that the employees in the Mohawk mines had stolen not less than \$1,000,000 worth of ore within a period of six months. In pursuance of an order of the Federal court, watchers were sent to the Mohawk property to prevent the stealing of ore, whereupon the employees, all of whom were members of the defendant union, refused to work below the surface where watchers were stationed. One of these watchers testified that he was waited on by members of the union and remonstrated with on the ground that no good union man would act as watcher. He refused to give up his position and was shortly afterwards expelled from the union. The union subsequently demanded his discharge, claiming that he had violated his obligations. The company refused to discharge him, and a strike was ordered. On settlement, wages were advanced and provisions made for change rooms in which the men were to change their outer garments, a watchman being present.

In March, 1907, a dispute arose between the Federation of Miners and the American Federation of Labor as to jurisdiction over mine carpenters, whereupon the mines were closed until the unions should

adjust their differences. At about this time a restaurant keeper in Goldfield, who had failed to comply with certain demands of the miners' union, was shot. The homicide was charged against a walking delegate and another member of the union, who were convicted. Attorneys to defend the persons charged were furnished by the union, which also paid them, at first \$5 per day, and afterwards \$50 per month, from the time of their conviction up to December 6, 1907. An agreement among employers prevented the employment of any member of the Western Federation of Miners during the latter part of March, but on April 1, 1907, a settlement between the miners and operators was reached by which the miners' union was allowed jurisdiction over all employees in and around the mines, mills, and smelters, "including timbermen, timber framers, engineers, blacksmiths, and machinists, and excepting superintendents and managers." Provisions as to the declaration of strikes, boycotts, and lockouts were included, and the term of the agreement was fixed at two years.

At the annual convention of the Federation of Miners, held in June, 1907, the declaration that it was one of the objects of the organization "to use all honorable means to maintain and promote friendly relations between ourselves and our employers, and endeavor by arbitration and conciliation, or other pacific means, to settle any difficulties which may arise between us, and thus to make contention and strikes unnecessary," was stricken out, and nothing of similar or equivalent meaning added. It was also made easier to declare strikes, and contracts or agreements for a specific length of time were prohibited.

In August change rooms were installed, as arranged for, but the water furnished was impure, and the arrangements otherwise so inconvenient and unsatisfactory that a strike was immediately inaugurated, which was settled by arranging for rooms in which the men could change clothing, without the humiliation and inconveniences of the old system; former employees were to be reinstated, and the jurisdiction of the union over employees was explicitly declared.

In November, 1907, the shortness of the supply of gold coin was advanced by the employers as a reason for paying wages one-half in gold and one-half in cashiers' checks, issued by John T. Cook & Co., bankers, Goldfield, Nev. The president of the miners' union declared that a later notice made all wages payable in scrip. After conference, the miners refused to work unless the wages were paid either in cash or in checks satisfactorily guaranteed. To this the mine owners replied that they could not "offer a guarantee in addition to that offered by the local banks for cashiers' checks issued by the local banks," whereupon, on November 27, 1907, the members of the union ceased work. Federal troops were brought to Goldfield

on the 6th of December, and three days later the Mine Owners' Association, to which the complainant belonged, gave notice of a reduction of wages and of a purpose to employ no members of the Goldfield Miners' Union. The President of the United States appointed a special commission to report on conditions in Goldfield. The report was admitted in evidence, and is in part as follows:

The question as to possible future violence and disorder on the withdrawal of the troops we find to depend largely on the personnel of the Miners' Union and their leaders in particular. A number of these leaders are represented to be men of radical socialistic beliefs and in favor of forcibly asserting what they hold to be their rights. Goldfield, being one of the newest and richest gold-mining camps of the West, attracted many of the most adventurous and radical characters in the Miners' Union, and while many of these have recently left, it is believed that there remain a considerable number of men whose records in other mining camps presage ill for the future of law and order in Goldfield, if Federal troops are withdrawn.

It was strongly urged that the experience of other mining camps with the Western Federation of Miners gave good grounds for the belief that should the mine operators insist on maintaining their position, as above stated, serious disorder would be likely to ensue immediately upon the withdrawal of the troops. All this, however, is purely a matter of future possibilities and not of actual present or past disorders in Goldfield. From the almost unanimous consensus of opinion of all witnesses we are satisfied that in the Miners' Union of Goldfield there are not over a few hundred men of a dangerous type—men who would readily resort to violence to accomplish their ends. The great majority, probably over three-fourths of the union, while loyal to their organization, were conceded to be men of law-abiding tendency who would not willingly initiate or support deliberate violence. But there is likewise little doubt but that this large proportion of orderly men have in the past permitted themselves and their organization to be dominated and controlled in its public actions by vicious leaders, and have lacked either the coherence or the courage to suppress this element and conduct the affairs of their organization in a way to command public respect and confidence. In the early part of the present year the Miners' Union of Goldfield permitted a celebration to be held by the union and a procession under its auspices to march through the streets of that city carrying the red flag of anarchy as a sole emblem, and bearing aloft legends and mottoes of an incendiary character. It is claimed that but a small proportion of the Miners' Union took part in the procession, but it had received the official sanction of the union, and, so far as is publicly known, was never repudiated by that body. Their personal good character can not excuse members of the Goldfield Union for permitting their leaders to outrage decent sentiment, and can not save the organization to which they belong from bearing the reputation it has earned. By permitting their organization to be managed and controlled by men of violent tendencies, the union as a body has thus laid itself open to the reproach of being a vicious organization, and has furnished a foundation for the fear existing in Goldfield that it will support violence and disorder to win its present strike.

In view of the foregoing facts, we believe there is considerable danger that serious disorders will be attempted if the troops be withdrawn and the mine operators insist on carrying out their publicly announced policy.

The legislature of Nevada, meeting in special session, petitioned for the retention of the Federal troops until a State constabulary should be organized.

A strike committee of five members took charge of the strike "with power and authority" to regulate it. This committee declared it has kept in touch with the progress of the strike, and that instructions were issued to all the members of the union as to their conduct. They were directed to commit no act of trespass or intimidation, and not to carry any deadly weapon. The company adduced evidence, part of it photographic, of the gathering of groups ranging in numbers from 15 persons to 150 and even 200, in such manner as to interfere with the movements of the workmen going to and from work; the use of threatening and insulting language was also alleged, so that some of the employees had already quit work and others would follow unless adequate protection should be given, though there were plenty of men ready and willing to work on complainants' terms, if they were protected.

The injunction was granted by Judge Farrington, who after stating the above facts said in part:

Evidence as to the probable and possible injuries which may result to complainant if members of the Goldfield Miners' Union are permitted to assemble and hold meetings pending this suit is not of such a character as to warrant an interlocutory order forbidding such assemblages. An injunction pendente lite should not usurp the place of a final decree neither should it reach out any further than is absolutely necessary to protect the rights and property of the petitioner from injuries which are not only irreparable, but which must be expected before the suit can be heard on its merits. Only those issues will be determined which are necessary factors in granting or denying a temporary restraining order. It is not necessary that the complainant's rights be clearly established, or that the court find complainant is entitled to prevail on the final hearing. It is sufficient if it appears that there is a real and substantial question between the parties, proper to be investigated in a court of equity, and in order to prevent irremedial injury to the complainant, before his claims can be investigated, it is necessary to prohibit any change in the conditions and relations of the property and of the parties during the litigation.

As to the charge that the company violated the Wyoming law as to combinations, the court said:

Sufficient evidence has not been introduced to support a finding that complainant has violated this statute. It has been held that, where a suit is brought by a corporation to enforce or protect a private right by injunction, a claim that the corporation is illegal or is a monopoly can not be made collaterally as a defense.

The court then referred to the deportations, in several cases of which the victim had been ordered to leave by an officer of the union, violent beatings being administered in some instances.

The next subject considered was the constitutionality of chapter 111, Acts of 1903 of the Nevada legislature, which forbids employers to require employees to enter into an agreement to join or not to join any labor organization as a condition of employment. This law was held to be violative of the provisions of the fourteenth amendment to the Constitution of the United States, on grounds set forth in the following quotation from Judge Farrington's remarks. After quoting the statute he said:

The obvious purpose of the Nevada statute just quoted is to invade and control the discretion of the employer in selecting his men. If the statute is valid, an employer can not make it a condition on which he will hire men that they shall not belong to any particular labor union; to do so is made a crime, no matter how vicious, turbulent, or lawless the organization may be. This statute lays no similar restriction upon the employees. Their freedom of contract is unrestrained. There is nothing in the statute which forbids union men from discriminating against nonunion men, or nonunion men from discriminating against union men. There is nothing which prevents union men from exacting, as a condition upon which they will work, an agreement that every nonunion man must be discharged, or join the union.

It may be to the advantage of a manufacturer to do business exclusively with some one labor union; its patronage may be immensely valuable to him; but to contract with his men that they must be members of such union, it matters not how wisely that organization may be controlled, or how great the advantage and profit to the master and his servants, if the latter become members of the organization, the employer, under the statute, is guilty of a crime if he insists, as a condition of employment, that his employees shall join the union. On the other hand, another operator may believe that the success of his business depends upon the undivided loyalty and support of his men, and that he can not have such loyalty and support if they belong to, and are bound to submit to the control of, a labor organization; but he also violates this statute by exacting as a condition of employment that his men shall not join a union.

It is a constitutional right of an employer to refuse to have business relations with any person or with any labor organization, and it is immaterial what his reasons are, whether good or bad, well or ill founded, or entirely trivial and whimsical. Under the conditions existing in Goldfield at the time the resolutions were published, it is possible that the only practical method of exercising this right was to require all employees to refrain from being or becoming members of the Western Federation of Miners. Thus we have a right guaranteed by the Constitution, and its exercise blocked, or at least hindered and restricted, by the statute of Nevada. It is too clear to require a citation of authorities that the legislature has no power to restrict the exercise of a constitutional right, unless the interests of the public, as distinguished from the interests of the individual, or of a class of individuals, demand such restraint. The act so forbidden by the legislature must be detrimental to the public welfare, and the health,

safety, or morals of the community to justify such interference. There can be no pretense here, and none is made, that the execution of such a contract as the one in question has any tendency to injure the health, safety, or morals of the public, or of either employer or employees. It is clear that the Nevada statute deprives the employer of the right to contract as to certain matters which may be vital to him, and that it also, while not preventing, does obstruct the exercise of his right to exclude objectionable persons from his employ. The fact that the statute includes an element which is not found in any other similar statute to which attention has been called, in that it prohibits contracts requiring employees to join a union as a condition of employment, in no wise heals its invalidity; the added element simply makes larger and wider the invasion of the liberty of the employer to fix the terms and conditions upon which he will contract for labor.

Statutes similar to the Nevada act in question have existed in other States, but, in every jurisdiction where their validity has been called in question, they have been held invalid, under the constitutional provision that no one shall be deprived of life, liberty, or property without due process of law. [Cases cited.]

Continuing, the court said:

An unlawful conspiracy is a combination between two or more persons to do an unlawful or criminal act, or to do a lawful act by criminal or unlawful means. (8 Cyc. 620.)

An examination of the resolution in question shows that the association agreed to do five acts, namely: First, to reduce the wages of the men employed by the various members of the association; second, to resume operations, giving preference to old employees; third, to reduce the cost of living in Goldfield District 20 per cent; fourth, to have no further dealings with the Goldfield Miners' Union, or any organization affiliating with the Western Federation of Miners; fifth, to require each person presenting himself to any member of the association for employment to sign, as a condition of such employment, an agreement that he is not, and during the period of his employment will not become, a member of respondent union. The fifth item may be regarded as the means agreed upon to accomplish the first and the fourth. None of the proposed acts are either unlawful or criminal. For these reasons I must hold that complainant in entering into the agreement with the other members of the Goldfield Mine Operators' Association, which is embodied in the resolutions of December 7, 1907, was not guilty of any unlawful conspiracy against the respondents.

Is the evidence sufficient to show the establishment of a picketing system and concerted action by the pickets to coerce and intimidate the employees of the mining company, and thus prevent complainant from operating its mines? The union, by unanimous vote of those present at the meeting of November 26th, declared a strike, and later appointed a strike committee composed of five members. This committee is clothed "with power and authority to oversee and regulate the conduct of said strike." The members of this committee state in their joint affidavit that the committee and the union found the picket system "practically useless," and therefore picketing "has been adopted only to a limited degree;" that is to say, men are not

assigned to any particular duty or place, no picket lines or squads of pickets have been organized, but union members in numbers ranging from 30 to 75 approach complainant's premises at the hours of the morning and afternoon change of shifts, and they do this at their own volition, without any concert among themselves, and without special, or any, direction from, or understanding with said union, or any of its members, officers, or committees. This picket system as organized, evidently contemplated the active participation of every member of the union, for the affidavit states "that all of the miners belonging to said union were instructed * * * to peaceably address any non-union man willing to listen, and endeavor in a lawful manner to persuade him to join said union, or refrain from injuring the cause of labor by taking the place of nonunion [sic] miners."

It is as unreasonable to suppose that these men assembled without design or concert among themselves, and without any direction or understanding with the union or its officers or committees, as it is to suppose that the wheels of a watch get into place by accident. Why are all miners belonging to the union instructed to peaceably address any nonunion miner willing to listen, and endeavor in a lawful manner to persuade him to join the union, etc? If it is not intended that the instruction should be obeyed, why is it given? It can not be assumed for an instant that the person who gave such instructions, or that any or all of the miners who received them, had any other thought but that they were to go where the nonunion men were to be found, and address them.

Each party has the right to enter into lawful competition for the support of the nonunion miners, and to endeavor by peaceful argument or persuasion to secure their cooperation, provided the persuasion is of such a character as to leave the person solicited feeling free to do as he pleases, and he is not persuaded to do that which in him would be unlawful. This is so, because workmen, when free from contract obligations, have a legal right, singly, collectively, or as a union, to quit work; that is, to strike, and, having this right, they have the further right to use such lawful means to make the strike effective as are not inconsistent with the rights of others. (*Karges Furniture Co. v. Amalgamated Woodworkers' Union*, 165 Ind. 421, 75 N. E. 877. [Bulletin No. 63, p. 546].) The mining company has the right to employ nonunion men to take the places vacated by those who quit work. The latter have no legal interest or concern in the contract between the company and its new employees. The places which they vacated to strike are no longer theirs, and never again will be theirs unless they are reemployed. It is difficult to see, when a man has voluntarily given up a job, how he can maintain that he has a shadow of claim or right to the vacated place. (*Union Pac. R. Co. v. Ruef* (C. C.), 120 Fed. 102, 128. [Bulletin No. 47, p. 967].)

There is no law, nor is it within the power of this or any other court, to make an order by which the Goldfield Consolidated Mines Company can be compelled against its will to reemploy any miner who quit, or any member of the Western Federation of Miners; neither can any member of that organization be compelled against his will to work for the company. The nonunion men have the same right to work or not work, to agree upon the terms of employment, or to quit work, as union men, no more, no less. They have a perfect right to take the vacated jobs if they can agree with the company upon terms, and the

respondents have no legal right to dictate what those terms shall be. They have the right to seek employment, to come and go from their work, or to go where they please on the public thoroughfare, without fear or molestation, threats, violence, or insult of any kind. They have a right to come and go without being picketed, or compelled to listen to argument or persuasion, whether it be peaceful or irritating. The pickets have no legal right to insist that any nonunion man shall listen to their solicitations if he is unwilling to do so, it matters not how peaceful and friendly such solicitations may be. (*Union Pac. R. Co. v. Ruef (C. C.)* [supra].) These considerations are true, because, under our system of government, every man has the right to enjoy his liberty and property until it is taken away from him by due process of law. To guard these rights is the true end and aim of our civilization. The existence of such a right in one man necessarily imposes upon every other man the duty to respect it, and upon the government and the courts the duty to guard and protect it. And it necessarily follows that any attempt to intimidate a man in order to compel him to refrain from exercising a legal right is unlawful, and this is true no matter whether the attempt is made by one man or many, or by a corporation or a labor union. Hence, if the pickets, or members of the respondent union, who gather at or near complainant's premises at the time of the morning and afternoon change of shifts, assail nonunion men with threats, ridicule, and insult, or follow them to or from their work with vile language and abusive epithets in order to compel them to quit work, or refrain from offering their labor to the complainant, they are guilty of unlawful conduct.

Whether the union is an original conspirator or whether, after it became aware of the coercive conduct of the pickets, it became a party to the conspiracy by cooperating with and supervising them, is immaterial. In either event, the Miners' Union is a conspirator and is responsible for the acts of its coconspirators.

In order to demonstrate that the union originated or joined this conspiracy, it is not necessary to prove any formal or explicit agreement. The existence of a conspiracy may be shown by circumstantial evidence.

The system of picketing was adopted by the union and its strike committee, and this picketing has been and is under the supervision of the union, through its strike committee. Each member of the committee has taken an active interest in the strike, keeping in close and constant touch with all union men engaged therein, and all, or nearly all, of the pickets are members of the union. Even if it were possible to believe that the union was innocent of any improper design when it adopted the picketing system "to a limited degree," it is idle to contend that it has remained in ignorance of the misconduct of its pickets. The knowledge of the strike committee was the knowledge of the union. Nevertheless, the union, through its strike committee, continued its supervision of the strike, and its members continued to threaten and abuse nonunion men. The coercion was in behalf of the union, for the benefit of the union, and in aid of the strike inaugurated by the union. The union can not now, while it is consciously and uncomplainingly accepting the benefits of this terrorism, relieve itself from responsibility by saying that it has always instructed the miners against lawlessness of every sort.

The policy and purpose of the Miners' Union and its leaders finds expression in the constitution of the Western Federation of Miners and in the constitution of the Goldfield Miners' Union No. 220.

The court then cited the changes made at the convention of the Federation in 1907, mentioned above, and said:

Whether there shall be constant turmoil and contention must depend upon the personnel of the men who control the action of the union. The industrial struggle between employer and employee, with occasional truces, whose length can not be regulated by agreement with the local union, must go on until, as the preamble to the present constitution of the Western Federation of Miners says, "the producer is recognized as the sole master of his product."

Conciliation, arbitration, and the promotion of friendly relations between employer and employee, and the elimination of strikes and contention, are no longer among the declared objects of the Western Federation of Miners, and its policy seems to be to render strikes easier, settlements more difficult, and settlements by local unions for any definite period impossible. The preamble to the constitution of the Goldfield Miners' Union declares that "the working class and the employing class have nothing in common. There can be no peace so long as hunger and want are found among millions of working people, and the few, who make up the employing class, have all the good things of life. Between these two classes a struggle must go on until all the toilers * * * take and hold that which they produce by their labor." In the early part of the year 1907, a celebration was held by the Goldfield Miners' Union and "under its auspices a procession marched through the streets of that city carrying the red flag of anarchy as a sole emblem, and bearing aloft legends and mottoes of an incendiary character."

About the beginning of the strike or lockout of March, 1907, the following notice was sent to the then manager of the Goldfield Consolidated Mines Company:

"GOLDFIELD, NEVADA, *March 8th, 1907.*

"MR. JOHN W. FINCH,
"Nixon Building.

"DEAR SIR: Goldfield Miners' Union No. 220, W. F. M., have passed a law that all workers employed around the mines must hold a membership card in this union, and if they do not join our members shall refuse to work. This pertains principally to carpenters. We demand that members of our organization only shall follow that work and shall draw the same wages as men now following that line of work. This goes into effect at once."

In the agreement by which that strike was settled, it was conceded that the union should have jurisdiction over all men employed in and around the mines, mills, and smelters, excepting superintendents and managers. A similar concession is to be found in each agreement recited in the record between complainant and the respondent union by which a strike was settled.

These considerations strengthen my conviction that injunctive relief is necessary. One of the most important elements to be considered in determining whether injurious conduct is to be apprehended

which ought to be restrained by order of this court is the character of the dominant faction of the Goldfield Miners' Union. If that faction is animated by the spirit and the purpose exhibited in the constitutional amendments made by the Western Federation of Miners, it would be remarkable if intimidation and coercion were not resorted to if necessary to secure "jurisdiction over all men regularly employed in and around the mines." When the spirit which prompts conciliation, arbitration, and friendly relations between employer and employee is banished, we are not far from anarchy.

An injunction pendente lite will issue against all of the respondents, except C. E. Mahoney.

INTERFERENCE WITH EMPLOYMENT—INTIMIDATION—*State v. McGee, Supreme Court of Errors of Connecticut, 69 Atlantic Reporter, page 1059.*—Frank J. McGee was convicted in the court of common pleas of New Haven County of intimidating an employee to cause him against his will to refrain from working for the McLagon Foundry Company, and appealed. The conviction was secured under the provisions of section 1296, General Statutes of 1902, and the appeal was based on two principal grounds—one that there were erroneous instructions as to the meaning of the section in question, and the other that the rules of procedure had not been compiled with in the trial court. A new trial was granted on the second ground named, the construction put by the lower court on the section involved being approved. The portion of the opinion of the court which relates to this section is reproduced.

Judge Thayer, speaking for the court, said:

The information is in four counts, each for a distinct offense, charging that the accused "did by threatening, following, mocking, and annoying intimidate" the person named in such count to compel him, "against his will, to refrain from working in the employ of the McLagon Foundry Company." Gen. St. 1902, sec. 1296, provides that "every person who shall threaten or use any means to intimidate any person to compel such person, against his will, to do or abstain from doing any act which such person has a legal right to do, or shall persistently follow such person in a disorderly manner, or injure or threaten to injure his property with intent to intimidate him, shall be punished by fine or imprisonment." The accused did not demur to the information or move in arrest of judgment after verdict, but now claims that the information does not charge an offense under the statute. The gist of the offense created by the statute is the threatening or following, etc., with the purpose or intent to intimidate, and it is not necessary, to constitute the crime, that the person who is threatened shall in fact be intimidated, provided the threats are such as are calculated to intimidate or put in fear an ordinarily firm and prudent man. The court, therefore, correctly refused to charge, as requested, that actual intimidation was necessary, and committed no error in charging, as it did, "that it is not necessary, in order to prove a crime under the statute, that the person to whom the threats

are made, or whom it is sought to intimidate, should be, in fact, made to fear or be in fact intimidated. It is only necessary to prove that the threats and acts are such as would be calculated to cause the ordinary man to fear or to affect his mind in such a way that he could not voluntarily act or assent."

LABOR ORGANIZATIONS—UNINCORPORATED ASSOCIATIONS AS PARTIES—BOYCOTTS—ATTACHMENT FOR DAMAGES—*Branson v. Industrial Workers of the World et al., Supreme Court of Nevada, 95 Pacific Reporter, page 354.*—L. C. Branson was owner and publisher of two newspapers, the Tonopah Daily Sun and the Goldfield Daily Sun, in the offices of which, as he alleged, he employed only union labor and paid union wages. The defendants, certain unincorporated associations, their officers and a number of members named (taken as representing the associations collectively), were charged by Branson with a conspiracy to destroy the value of his property, because he refused to require his employees to become members of the Industrial Workers of the World. Specific acts of intimidation and violence were adduced as showing the method of the boycott, which extended to newsboys, dealers, advertisers, customers for job work, and the employees of the plaintiff. Judgment in damages in the amount of \$25,000 was asked for, and an attachment was obtained on an affidavit that the "defendants had criminally incurred the obligations for which the suit has been commenced."

The case was heard in the circuit court of Nye County, in which certain of the defendants appeared only for the purpose of making a motion that the complaint be stricken from the files, the summons vacated, quashed, and set aside, and that all proceedings so far had be annulled and declared void. This motion was based on the grounds that parties defendant were not properly designated in the complaint, the action not being brought against natural or artificial persons, but against voluntary, unincorporated associations, which are not legal entities and have no existence apart from the persons comprising them. Other motions were made of similar intent, alleging nonconformity to the practice act of the State and the insufficiency of the complaint to state facts which would support a charge of either criminal or civil liability. The circuit court dismissed the action and dissolved the attachment in so far as it related to each and all the unincorporated associations, whereupon Branson appealed, securing a reversal of the judgment of the court below, the case being remanded for further proceedings. The grounds for this reversal appear in the following extracts from the opinion of the court:

It will be observed that in the first motion quoted above it was asked, first, "that the complaint on file herein be stricken from the files"; second, "the summons vacated, quashed, and set aside";

third, that "all and singular the proceedings so far had * * * be annulled and declared void"; fourth, "that said action be dismissed." There is no specific provision in the statutes for motions of this character, and they should not be granted unless the moving party is clearly entitled to the relief asked for, and the pleadings are not capable of being amended so as to cure the defect complained of. It is manifest that the court could not appropriately grant any of the things demanded in the motion when there were any proper parties defendant. If the court had denied the motion, respondents could not have successfully assigned error, even though it be conceded that it was not proper to make voluntary unincorporated associations of persons, parties to actions merely by the name of the association. In this case, the plaintiff is a natural person, and numerous natural persons are included as defendants. While the trial court could not grant the motion in its entirety, as prayed for, it did grant it in part, by dismissing the action in so far as the voluntary unincorporated associations named and set forth in the complaint were concerned. It seems to be conceded that the effect of this order would be practically to strike from the complaint all defendants, excepting the few designated by name, while the many hundreds who compose the organizations would in no sense be parties to the action. For the purposes of this opinion, we will treat it as having such effect.

While a voluntary unincorporated association can not by its name alone sue or be sued, nevertheless, such an organization has its rights and responsibilities, which rights it may enforce by appropriate procedure; and, by the same procedure, it necessarily follows, it may be held accountable for its responsibilities. These organizations usually comprise a large membership, and are governed in accordance with prescribed rules and regulations by officers elected for the purpose. They frequently not only possess a large amount of property, but exercise vast powers in the communities in which they exist. It is conceded that they may sue or be sued by joining all their members, but this, if requisite, would impose great inconvenience upon the organizations themselves, as well as hardship upon those seeking redress against such organizations, for it would be impossible, in many instances, for nonmembers to obtain the names of more than a small fraction of the membership, without great effort, delay, and probable expense. It is manifest, we think, from the complaint, that the plaintiff proceeded upon the theory that the persons constituting the defendant organizations, being numerous, he could proceed against a few personally, who would represent the whole body of the defendant organizations. Counsel for appellant now contends that the defendant organizations are properly made defendants upon this theory. It has long been recognized in proceedings in equity that an action may be instituted by or against a voluntary unincorporated organization, where the members comprising the same were numerous, by simply joining as defendants a few natural persons, members of the organization, sufficient to represent and protect the interests of the entire membership, and that the few may be made plaintiffs or defendants for all. Were this a proceeding in equity, there would be no question about the right of plaintiff to make certain of the members of the defendant organizations defendants for all their associates who had a common interest. This, however, is an action at law for damages, and the equity rule does not prevail unless made so by

statute. Section 14 of the Civil Practice Act of this State (Comp. Laws, sec. 3109) provides: "Of the parties to the action, those who are united in interest shall be joined as plaintiffs or defendants; but if the consent of any one, who should have been joined as plaintiff, can not be obtained, he may be made a defendant, the reason thereof being stated in the complaint; and when the question is one of a common or general interest, of many persons, or when the parties are numerous, and it is impracticable to bring them all before the court, one or more may sue or defend for the benefit of all. Tenants in common, joint tenants, or copartners, or any number less than all, may jointly or severally bring or defend or continue the prosecution or defense of any action for the enforcement of the rights of such person or persons." We think it was the intention of the legislature, by this provision of the statute, to make the equity rule applicable to all proceedings in the courts of this State, whether the same be of a legal or equitable nature. Under our code provision, there is but one form of civil action, and legal and equitable distinctions, so far as practice is concerned, are largely, if not entirely, done away with. To hold that the defendant organizations can not be sued without including all members, which are so numerous, scattered and difficult to ascertain might cause such hardship and delay as would amount to a denial of justice. It is hard to conceive of any case to which the statute would be more applicable in its provisions than where the parties are numerous one or more may sue or defend for all. We think, as the court did not and could not grant the relief demanded in the motion, it should have denied it in toto, leaving respondents to whatever remedy they may have been entitled by demurrer.

It appears from the order of the lower court that the attachment was only dissolved as against the voluntary unincorporated associations designated by name in the complaint, but as to the natural persons therein named it was not dissolved. From this it would appear that the trial court did not consider the writ as against the natural persons defendant to have been improvidently issued, and in this view the trial court was clearly correct. What we have said in reference to the voluntary associations as parties defendant applies with equal force to the order dismissing the attachment as to them. If the attachment is good as against any defendants, it is good as to all.

It is contended by counsel for respondents that the affidavit fails to sufficiently charge that the alleged obligation of defendants to pay damages to plaintiff was criminally incurred. The affidavit charges such liability in the language of the statute (Comp. Laws, sec. 3218), and, in addition, makes the complaint with its allegations a part of the affidavit. There can be no question that a criminal conspiracy is alleged in the affidavit under all the authorities. The law, upon one portion of the case as it appears from the affidavit, is concisely stated in 8 Cyc. 639, as follows: "Neither at common law nor under statutes modifying the common-law doctrine is it lawful for workmen to combine to injure another's business by causing his employees to leave his service by intimidation, threats, molestation, or coercion. Such a combination constitutes an indictable conspiracy." Again, the same authority, in continuation of the same general topic, says: "This term (boycott) ordinarily means a confederation, generally secret, of many persons whose intent is to injure another, by preventing any and all persons from doing business with him through fear of incurring

the displeasure, persecution, and vengeance of the conspirators. The character of agreement included in the term defined is highly unlawful and is an indictable conspiracy." Such a conspiracy is made punishable both by fine and imprisonment under section 4751 of the Compiled Laws of Nevada.

In *Ex parte Boyce*, 27 Nev. 229, 75 Pac. 1, we said: "Labor properly directed creates wealth, and all honest toil is noble and commendable. The right to acquire and hold property guaranteed by our Constitution is one of the most essential for the existence and happiness of man, and for our purposes here we may consider it to be the cornerstone in the temple of our liberties, and that it implies and includes the right to labor. It may also be granted that labor, the poor man's patrimony, the creator of wealth, and upon which all must depend for sustenance, is the highest species of property, and the right to toil is as sacred and secure as the millions of the wealthy; but individual rights, however great, are subject to certain limitations necessary for the good of others and the community, and inherent in every well-regulated government. * * * Broadly speaking, the right to acquire and hold property, which presupposes the one to labor at all ordinary pursuits, is subordinate to this greater obligation not to injure others, individually or collectively, and to contribute and aid in the support of the government in all its legitimate objects."

It necessarily follows that any attempt by conspiracy to interfere with these fundamental and essential rights or by threats, intimidation, and violence, to prevent the employer from hiring or the employee from laboring, is unlawful under our system of government by which all men are free and equal. No organization or combination of men or individuals can lawfully prevent the exercise of these constitutional rights by all others. If it were legal for the defendant organizations or the officers and members by force, threats, or intimidation to prevent the employees of plaintiff from continuing in their employment, it would be equally so for the unions to which plaintiff's employees belong and for owners' and operators' associations or for other organizations or the officers and members thereof by force, threats, or violence to prevent the members of the defendant organizations from working, even to the extent of starvation. As the law bears equally upon all, it is self-evident that if any labor union or organization could by threats, force, and intimidation lawfully prevent the members of any other union or organization from laboring for employers, or could by force, threats, and intimidation prevent employers from hiring members of other unions or organizations, that every other union or organization would have the same and equal right, resulting eventually in control by the organization exercising the most force and violence, and in the overthrow and subversion of law and order.

Referring to the section of the crimes and punishments act of Nevada relative to conspiracy, counsel for respondents in his brief says: "The conspiracy statute, which was but declaratory of the common law, was amended in 1887, Compiled Laws, sec. 4751, and provides: 'That no part of this act shall be construed in any court of this State to restrict or prohibit the orderly and peaceably assembling or cooperation of persons employed in any profession, trade or handicraft for the purpose of securing an advance in the rate of wages, or compensation, or for the maintenance of the same.' * * * Whether the means by which labor combinations seek to effect its objects and

purposes is criminal or not depends upon the lawfulness of the mode or action taken in and by which injury is inflicted or threatened—that is, whether it is an actionable wrong or is merely such as the law denominates *damnum absque injuria*.”

According to the complaint and affidavit in this case, the defendants are not within the provisions of the amendment of the statute in any sense whatever. No question of an advance in the rate of wages paid employees, or the maintenance of the same, is here involved. Upon the contrary, the complaint alleges that plaintiff was employing “union” men and paying “union” wages. So far as the complaint now before the court is concerned, it appears that both the plaintiff and his employees were entirely satisfied with existing conditions. The damage alleged in this case to have been sustained was not caused by the employees of plaintiff seeking by peaceable means to maintain or better their condition, but by outsiders, who are alleged to have demanded of plaintiff that he compel his employees to become members of what would appear to be a rival labor organization, and, upon his refusal, entered into the conspiracy charged, to compel him to accede to their demands, or they would ruin his business. Nor is it charged even that defendants were seeking to accomplish their declared purpose by “orderly and peaceably assembling or cooperation;” but, upon the contrary, by means of intimidation, threats of violence and actual violence. Counsel for respondents has not cited us an authority, nor do we think one can be found, holding that what defendants are charged in the complaint with having conspired to accomplish by resorting to intimidation and acts of violence, did not state facts which constitute crime.

It is not necessary that all of the facts alleged to have been committed in pursuance of the conspiracy charged be, in themselves, of a criminal nature; and it is unnecessary to determine whether each and every specific act alleged is unlawful. Some of the acts charged are known by all men to be unlawful, and when they are performed as a part of the means to carry out the purpose which the complaint alleges the defendants combined to accomplish, a conspiracy, criminal in its nature, is sufficiently charged, at least for the purposes of an affidavit for attachment.

In considering the order of the district court, similarly as questions upon demurrer, the charges and allegations of the complaint are assumed to be true for the purposes of the appeal, to the end that plaintiff may have an opportunity to present proof, but whether the defendants did in fact commit the unlawful acts charged by the complaint or not remains to be determined upon the trial, and by a jury, if any of the parties desire one, after defendants have been given an opportunity to make denial or answer setting up any defense they may have, and all parties have presented their evidence and been heard.

For the reasons given, the orders appealed from are reversed, and the cause is remanded for further proceedings.

PICKETING—USE OF STREETS—PERSONAL LIBERTY—MUNICIPAL REGULATION—CONSTITUTIONALITY—*City of St. Louis v. Gloner*, *Supreme Court of Missouri*, 109 *Southwestern Reporter*, page 30.—Section 1460 of the municipal code of the city of St. Louis, among

other provisions, subjects "any person or persons who shall lounge, stand, or loaf around or about or at street corners or other public places, in the day or night time," to a penalty of not less than five nor more than fifty dollars. Jacob Gloner was arrested for an alleged violation of this regulation, and was acquitted by the St. Louis court of criminal correction, whereupon the city appealed. On the appeal the judgment of the court below was affirmed, the ordinance in question being declared unconstitutional.

The evidence showed that Gloner and three others were doing duty as pickets in the conduct of a strike in the city of St. Louis and that he was standing at a corner of the street to intercept workmen in the service of the employer against whom the strike was directed, with the purpose of persuading them not to continue in his service. Gloner refused to "move on" when directed by the police to do so, and was placed under arrest.

Judge Burgess, who delivered the opinion of the court, after stating the facts, said in part:

While the city of St. Louis is given power by the second clause of section 26, art. 3, of its charter (Ann. St. 1906, p. 4809), to regulate the use of its streets, the question here presented is as to whether it had the right, under the provisions of its charter, to pass the ordinance upon which this prosecution is based, and which makes it a misdemeanor, punishable by fine, for any person to lounge, stand, or loaf around or about or at street corners or other public places, in the day or night time. There is no pretense that defendant was at the time of this arrest in any way obstructing the street, or interfering with the rights of any other person, or conducting himself in a disorderly manner; the only charge against him being that he violated said ordinance on the 4th day of August, 1904, and on divers other days and times prior thereto, by unlawfully lounging, standing, and loafing around and about and at certain public street corners and other public places, to wit, Eleventh street and Washington avenue, in the day and night time. While the city has the undoubted right, under its charter, to regulate the use of its streets, it has no right to do so in a way that interferes with the personal liberty of the citizen as guaranteed to him by our constitution and laws. Under this ordinance it is just as much an offense to stand or loaf around upon the corner of one of the streets in the city for five minutes as for two hours or more, time not being an ingredient of the offense; and this, too, regardless of the fact that the offender may not during that time impede the passage of other pedestrians or otherwise interfere with the rights of others. The defendant had the unquestioned right to go where he pleased, and to stop and remain upon the corner of any street that he might desire, so long as he conducted himself in a decent and orderly manner, disturbing no one, nor interfering with any one's right to the use of the street.

It is, however, said for the city that "John Smith, a member of the public, has no right for his own private purposes, whatever they may be, to take his stand for a period of two hours every day upon a particular portion of the public street in a great and populous city."

That he has such right there can, in our opinion, be no question, providing he conducts himself in a peaceful, orderly manner, disturbs no one, and commits no overt act. In this case, according to the testimony of the officer who made the arrest, he arrested the defendant for the purpose of preventing him from doing "picket duty," which, as explained by the court, consisted in requesting men not to take the places of strikers. In the case of *Marx & Haas Jeans Clothing Co. v. Watson* (168 Mo. 133, 67 S. W. 391 [Bulletin No. 44, p. 157]) Judge Sherwood, speaking for the court, said: "If these defendants are not permitted to tell the story of their wrongs, or, if you please, their supposed wrongs, by word of mouth, or with pen or print, and to endeavor to persuade others to aid them by all peaceable means, in securing redress of such wrongs, what becomes of free speech, and what of personal liberty? The fact that in exercising that freedom they thereby do plaintiff an actionable injury, such fact does not go a hair towards a diminution of their right of free speech, etc., for the exercise of which, if resulting in such injury, the constitution makes them expressly responsible." In *Beaton v. Tarrant* (102 Ill. App. 124) it was held that workmen may use the streets and highways in a manner not inconsistent with public travel, for the purpose of entreaty, inducement, and peaceable persuasion in good faith.

Our conclusion is that the ordinance is unconstitutional and invalid, because it infringes upon the right of personal liberty, and is unreasonable and oppressive.

DECISIONS UNDER COMMON LAW.

LABOR ORGANIZATIONS—BENEFITS—CONSTRUCTION OF BY-LAWS—
Donavan v. Friendly Society of Engravers, Supreme Court of Rhode Island, 69 Atlantic Reporter, page 554.—John F. Donovan was a member of the above-named (incorporated) society, and had been discharged from employment on account of serving on a committee of the organization to confer with his employer. A by-law of the union provided that where members were discharged for such cause, they would be paid, from the funds of the union, "their full wages as received by them at the date of such discharge, until they shall again obtain steady employment." Subsequent to his discharge, Donovan secured employment, but not as an engraver, and in an action to recover the amount of his wages, judgment was given him for full wages as an engraver, without reference to the amount received by him in his new employment. The society took an appeal to the superior court of Providence County, which directed a new trial to be had unless Donovan should remit all but \$100 of the sum awarded. On his appeal to the supreme court, the judgment of the superior court was affirmed, as is shown by the following extract from the opinion of the court:

We think the construction placed upon the words "steady employment" by the superior court was correct. There is no express limitation in the by-law to employment in the trade of an engraver, and it is not necessary to imply such a limitation in order to carry

out the object of the provision. The design was evidently to give aid to a member while he should be unable to provide for his own support. The necessity for such aid ceases when he accepts steady employment in any occupation. The construction urged by the plaintiff would require the defendant to pay him \$20 a week indefinitely, though he might be earning a larger amount if it were not earned as an engraver, which seems to us a greater burden than the defendant can be presumed to have intended to assume.

LABOR ORGANIZATIONS—BOYCOTT—INJUNCTION—CONSPIRACY—FREEDOM OF SPEECH—REMEDIES—*Lindsay & Company v. Montana Federation of Labor et al.*, *Supreme Court of Montana*, 96 *Pacific Reporter*, page 127.—An injunction had been secured by the company named in the district court of Yellowstone County, which was on hearing modified and continued. From the order denying dissolution the Federation appealed, securing a reversal as appears in the following opinion of the court, which was delivered by Judge Holloway, and which is reproduced practically in full:

As modified, the injunction is as follows: "You are hereby restrained and enjoined, until the further order of this court, or the judge thereof, from in any manner, directly or indirectly, interfering with or obstructing the business of plaintiff in the city of Billings and the town of Bear Creek, or in any manner interfering with any of the patrons of the plaintiff from trading or dealing with the plaintiff, or by threats, abuse, intimidation, or other means calculated or intended to interfere with the said business of the plaintiff; from declaring the plaintiff unfair, or from boycotting the plaintiff or from printing, publishing, circulating, posting, or distributing any circulars, posters, handbills, or other written or printed matter containing opprobrious or injurious epithets against said plaintiff or its business; from interfering with, intimidating, boycotting, molesting, or threatening in any manner the patrons or customers of the plaintiff, or any other person or persons, with the purpose of inducing them not to deal with or do business with the plaintiff, and from giving any directions or orders to committees, associations, unions, or any of their officers or members, or otherwise for the performance of any act in this complaint mentioned, or in any manner obstructing or interfering with the regular operations and the conduct of the business of the plaintiff and from in any way or manner threatening, intimidating or interfering with the plaintiff or any of its officers, agents, or employees in the conduct of the plaintiff's business, or in the discharge of the duties of any such officers, agents, or employees." From the order refusing to dissolve the injunction, this appeal was taken.

For the purpose of this decision the allegations of the complaint need not be referred to at length. We are not called upon to determine the propriety of issuing the injunction in the first instance. The question for our decision is: Should the injunction have been continued in force after the hearing on the motion to dissolve was had? And the answer to this must depend upon the facts disclosed at such hearing. Stripped of all useless verbiage, these facts appeared: That some time prior to October, 1907, Lindsay & Co. had

been declared unfair by the Miners' Union and Trades Assembly in Helena, and this action had been indorsed by the Montana Federation of Labor, and circulars announcing the fact had been sent to labor organizations throughout the State. On October 25, 1907, the Yellowstone Trades and Labor Assembly, upon information received of the action taken in Helena, passed a resolution which declared Lindsay & Co. unfair, and referred the matter to the grievance committee of that organization to advise the public of the action taken. Acting upon the authority thus given, the grievance committee caused to be published and circulated among the business houses and elsewhere in Billings circulars, of which the following is a copy:

"UNFAIR.

"All laboring men and those in sympathy with organized labor are requested not to patronize Lindsay & Co. who are engaged in the wholesale fruit business, also distributors for cigars and vegetables of all kinds in Billings and vicinity, as they are unfair. We urge the retail merchants, laboring men, and all who are in sympathy with organized labor to place themselves in position to patronize friendly wholesalers. We further desire to call attention to the fact that Lindsay & Co. are operating peddling wagons throughout this city, and we ask the people to guard against patronizing these wagons. We ask this for your own protection and the protection of organized labor.

"[Signed] YELLOWSTONE TRADES AND LABOR ASSEMBLY."

That immediately after the adoption of the resolution and the publication of this circular a large number of retail dealers in Billings, who had theretofore purchased goods from the plaintiff company, ceased to do business with the concern, with the result that the business of the company at Billings was practically paralyzed, and great financial loss resulted. As stated by the witness Vaughan for plaintiff: "We have lost patronage from these merchants on account of being unfair. A circular printed and sent around. There is no other cause." Another witness for the plaintiff testified that at a meeting of the Clerks' Union in Billings early in November, 1907, the defendant Fairgrieve made the statement that "they had Lindsay & Co. on the unfair list, and they had him where they wanted him, and he believed it was a good thing to leave him there." Fairgrieve testified that he did not remember making any such statement. However, this is immaterial to a consideration of the matter before us. From these facts we are to determine the question: Should the injunction have been dissolved? It is to be observed that only two acts of any consequence are shown to have been committed by the defendants: (1) They declared Lindsay & Co. unfair, or, in the language of respondent, boycotted the company; and (2) they published the circular set forth above, that is, they caused it to be printed and circulated. The injunction, as modified, is very sweeping in its terms, and in that form could not be justified by any possible state of facts; but assuming that it was continued for the purpose of preventing the continuance in force of the boycott, and for the purpose of preventing a repetition of the publication of the circular or a similar one, although there is not any evidence of any threat or purpose on the part of the defendants or any of them to repeat that act,

we may consider the question presented to us by reference to these two principal acts mentioned.

1. Does the continuance in force of the resolution of October 25, 1907, amount to such an invasion of plaintiff's rights as will warrant the interposition of a court of equity by injunction?

It is insisted by the respondent company that the defendants organized a boycott of plaintiff's business by agreeing among themselves and with other members of organized labor to withhold their patronage from the plaintiff company, and that they undertook by coercion to compel the retail dealers of Billings and others to likewise withdraw their patronage; that the resolution of October 25, 1907, was intended and understood by the defendants to express the object of their preconcerted design; and that the publication of the circular was for the purpose of intimidating the retail dealers and others. We think it may fairly be said to have been shown by the evidence that upon the adoption of the resolution of October 25th, and upon the intelligence of that action becoming general among the union men there, it was understood among those men that they would not patronize Lindsay & Co. while the interdict was in force, and would not patronize any one who did patronize that company, and that they expected that all retailers and others in sympathy with their organizations would cease trading with the plaintiff company. Whether the acts done by the defendants constituted a boycott, of course, depends entirely upon the definition of that term which may be adopted. We are of the opinion that the evidence shows that these defendants inaugurated a boycott on Lindsay & Co., and that it was still in effect at the date of the hearing. We adopt the language of the Supreme Court of New York in *Mills v. United States Printing Co.* (Sup.) 91 N. Y. Supp. 185, in which the court, speaking through Justice Jenks, said: "I think that the verb 'to boycott' does not necessarily signify that the doers employ violence, intimidation, or other unlawful coercive means; but that it may be correctly used in the sense of the act of a combination, in refusing to have business dealings with another until he removes or ameliorates conditions which are deemed inimical to the welfare of the members of the combination, or some of them, or grants concessions which are deemed to make for that purpose." In *Ulery v. Chicago Live Stock Exchange*, 54 Ill. App. 233, it is said: "A person, with or without reason, may refuse to trade with another; so may 10 or 50 persons refuse. An individual may advise his neighbor or friend not to trade with another neighbor. He may even command when the command amounts only to earnest advice."

But what is there unlawful in the act of the union workmen of Billings in withdrawing their patronage from the plaintiff? Certainly it can not be said that Lindsay & Co. had a property right in the trade of any particular person. In this country patronage depends upon good will, and we do not think that it will be contended by any one that it was wrongful or unlawful, or violated any right of the plaintiff company, for any particular individual in Billings to withdraw his patronage from Lindsay & Co., or from any other concern which might be doing business with that company, and that, too, without regard to his reason for doing so. But there can be found running through our legal literature many remarkable statements that an act perfectly lawful when done by one person becomes by some sort of legerdemain criminal when done by two or

more persons acting in concert, and this upon the theory that the concerted action amounts to a conspiracy. But with this doctrine we do not agree. If an individual is clothed with a right when acting alone, he does not lose such right merely by acting with others, each of whom is clothed with the same right. If the act done is lawful, the combination of several persons to commit it does not render it unlawful. In other words, the mere combination of action is not an element which gives character to the act. It is the illegality of the purpose to be accomplished, or the illegal means used in furtherance of the purpose, which makes the act illegal. (18 Ency. Law (2d Ed.) 82; *Bohn Mfg. Co. v. Hollis*, 54 Minn. 223, 55 N. W. 119.) "A conspiracy is a combination of two or more persons by some concerted action to accomplish a criminal or unlawful purpose or to accomplish a purpose, not in itself criminal or unlawful, by criminal or unlawful means." (Anderson's Law Dictionary, 234.) Chief Justice Parker, in speaking for the Court of Appeals in *National Protective Ass'n v. Cumming*, 170 N. Y. 315, 63 N. E. 369 [Bulletin No. 42, p. 1118], said: "Whatever one man may do alone, he may do in combination with others, provided they have no unlawful object in view. Mere numbers do not ordinarily affect the quality of the act."

If, then, these defendants and their associates did not violate any legal right of the plaintiff in withdrawing their patronage from the company, or in agreeing to withdraw their patronage from any one who might patronize *Lindsay & Co.*, they can not be enjoined from continuing the boycott in force, so long as the means employed to make the boycott effective are not illegal. The evidence shows that the only means used in this instance was the publication of the circular in question, and this brings us to a consideration of the second proposition involved.

2. (a) May a court of equity enjoin the publication by an individual of a circular of this character; (b) if not, may it enjoin such publication when made by a number of individuals acting collectively?

(a) Article 3 of our constitution is entitled: "A declaration of rights of the people of the State of Montana," and section 10 of that article, so far as applicable here, reads as follows: "No law shall be passed impairing the freedom of speech; every person shall be free to speak, write or publish whatever he will on any subject, being responsible for all abuse of that liberty." The language here employed seems too clear to admit of doubt or argument. The one fundamental idea conveyed by this section is penalty for a violation of the privilege, not prevention of its abuse. The language of the section is not susceptible of any other meaning than this: That the individual citizen of Montana can not be prevented from speaking, writing, or publishing whatever he will on any subject. If, however, what he writes or publishes constitutes a criminal libel, he may be held responsible for the abuse of the liberty in a criminal prosecution (Pen. Code, c. 8), or, if what he speaks, writes, or publishes wrongfully infringes the rights of others, he may be held responsible for the abuse in a civil action for damages. If this is not the meaning of the section, it is because the framers employed language which is impotent as a vehicle for conveying their idea.

But it is suggested by counsel for respondent company that these defendants are insolvent, and that a judgment for damages would

be worthless. Even granting this to be so, still the constitution does not discriminate among men according to the amount of their possessions. The guaranty of this section extends as fully to the poorest as to the wealthiest citizen of the State; and, though an abuse of the liberty so guaranteed may result in loss for which there can not be any adequate compensation, the framers of our constitution in preparing it, and the people in adopting it, doubtless concluded that it was better that such results be reached in isolated cases, than that the liberty of speech be subject to the supervision of a censor. To declare that a court may say that an individual shall not publish a particular item is to say that the court may determine in advance just what the citizen may or may not speak or write upon a given subject—is, in fact, to say that such court is a censor of speech as well as of the press. Under similar constitutional provisions, the supreme courts of California and Missouri have reached the same conclusion. (*Daily v. Superior Court*, 112 Cal. 94, 44 Pac. 458; *Marx & Haas Jeans Clothing Co. v. Watson*, 168 Mo. 133, 67 S. W. 391.)

(b) What we have said above, in the first paragraph of this opinion, is likewise applicable here. If any one of these individuals could publish this circular, they may with equal security all join in its publication. We think the evidence produced at the hearing was insufficient to justify the continuance in force of the injunction, and it should have been dissolved.

The order of the court is reversed, and the cause is remanded, with direction to vacate the order heretofore made and enter an order dissolving the injunction.

LABOR ORGANIZATIONS—EXPULSION OF MEMBERS—BENEFICIAL ASSOCIATIONS—FORFEITURE OF POLICY—ACTS OF THIRD PARTIES—MEASURE OF DAMAGES—*St. Louis Southwestern Railway Company of Texas v. Thompson*, Court of Civil Appeals of Texas, 108 *Southwestern Reporter*, page 453.—This case was before the court of appeals for the second time, having first been heard under the title, *Thompson v. Grand International Brotherhood of Locomotive Engineers et al.* (91 S. W. 834). The appeal at that time was by W. Z. Thompson from a decision of the district court of Smith County, in which he had sued the Brotherhood, the railway company above named, and certain individuals, to recover damages for alleged wrongful and malicious expulsion from the Brotherhood and for the malicious publication in the Brotherhood Magazine of the statement that he had been expelled for unbecoming conduct and the violation of his obligation.

On the first hearing the district court directed a verdict in favor of the defendants, which judgment was, on appeal, reversed and the case was remanded for a new trial under a ruling that it should have gone to the jury. On this trial judgment was given against the railroad company for \$500 actual and \$2,000 exemplary damages, and the case as to the other defendants was dismissed. The railroad company thereupon appealed, securing first a reversal of the judg-

ment awarding damages, but on rehearing the judgment as above set forth was affirmed.

The facts and much of the opinion of the court in the second trial are presented only by reference to the opinion in the first appeal. It appears that Thompson was a locomotive engineer and had been at one time employed by the St. Louis Southwestern Railway Company, and that he was, prior to his expulsion therefrom, a member in good standing of the Brotherhood of Locomotive Engineers. This organization extends over the United States, Canada, and Mexico, and includes in its membership nearly all the locomotive engineers in its territory. It consists of a "grand brotherhood", incorporated and having its headquarters at Cleveland, Ohio, with a "grand chief engineer," P. M. Arthur; and of subordinate divisions, each presided over by a "chief engineer" and other officials. The order publishes a monthly magazine of large circulation among its members and others as an organ of communication between its members and also with the public. By the rules of the local branches, all expulsions of members are published in this journal. In the case of such expulsions, an appeal lies to the grand chief engineer.

Upon joining the organization the members obligate themselves, among other things, not to "sign or circulate, or cause to be signed or circulated, any paper, circular, petition, or document of any sort whatsoever, calculated to injure or destroy the organization." The order collects dues and provides sick and disability benefits and issues life insurance policies, one of which Thompson held. The amount of Thompson's policy was \$1,500 and he had paid premiums thereon in an amount, approximately, of \$350. Members also hold traveling cards which enable them to travel on all trains without the payment of fare.

Thompson was expelled from his local organization and appealed to the grand chief engineer, who upheld the action of the local body. The charges were made by the first assistant engineer of the local body (No. 201), and were two in number, as follows: "For writing to Mrs. A. H. Penniman and urging her to sue the Cotton Belt Railway for the death of her husband. For going on the witness stand in the Bolton case and testifying against the Cotton Belt Railway to the injury of other brothers and causing the brotherhood at large to lose prestige with the Cotton Belt Railway." The letter mentioned was one that had been written by one J. W. Nichols and was signed by him and by Thompson at the former's request. It was addressed to the widow of a locomotive engineer who had lost his life in a wreck, and urged her not to compromise with the company nor settle with it "for a cent less than \$10,000," and concluded, "We feel certain that you can get \$20,000 from the company, and will only have to pay one-third of it to a lawyer if you will only stand firm and not be persuaded to give away your rights. You can easily

find out who we are from your friends here in Tyler, and if you should want to talk to us we will gladly call to see you. We are not working for the Cotton Belt Company, and we are free to advise you honestly without fear or hope of reward." Thompson sought to justify himself in signing the letter by citing a by-law of the brotherhood that provided that "The widow of any deceased brother shall be assisted in every way and manner which may be deemed proper, etc."

On the first appeal the court had said:

It may be remarked in limine, that the courts are not disposed to interfere with the internal management and conduct of such organizations as the Brotherhood of Locomotive Engineers is shown to be. Its members become such voluntarily and in doing so agree to submit to and abide by the laws of the organization, as embodied in its constitution and by-laws and other rules and regulations lawfully adopted thereunder, and to submit their rights to the judgment of the tribunals provided by the laws of the organization for the government of its members, under the forms of procedure provided. This is true without regard to the fact that the organization is incorporated. "By uniting with the society the member assents to and accepts the constitution and impliedly binds himself to abide by the decision of such boards as that instrument may provide for the determination of disputes arising within the organization. The decisions of those tribunals when organized under the constitution and lawfully exercising their powers, though they involve the expulsion of a member, are no more subject to collateral attack for mere error, than are the judgments of a court of law." (*Screwmen's, etc., Association v. Benson*, 75 Tex. 555, 13 S. W. 380; 1 Bacon on Ben. Soc., Sec. 102.) This doctrine, however, has this important qualification which is as clearly settled as the general rule, that the society "must confine itself to the powers vested in it, and in good faith pursue the matters prescribed by its laws, such laws not being in violation of the laws of the land, or any inalienable right of the member." (*Otto v. Journeymen Tailors' Union*, 75 Cal. 308, 17 Pac. 217, 7 Am. St. Rep. 156.)

We are not prepared to say that if the members of division 201 in good faith and in the exercise of their honest judgment determined that the signing of this letter, under the circumstances, was unbecoming conduct or a violation by appellant of his obligation, and sufficient ground for expulsion, they would not have been authorized under the constitution and by-laws of the order to so determine. A good deal of latitude must necessarily, and should be, allowed the members in determining questions such as these, and courts will not interfere, if they act in good faith. Whether this action of the local subdivision, in so far as it was based upon the signing of the Penniman letter alone, was authorized, would depend upon whether its members in good faith, and in the exercise of their honest judgment, expelled appellant for this cause. The evidence introduced by appellant sufficiently raised this issue which should have been submitted to the jury.

The second specification under the charge presented against appellant is based upon his action in "going upon the witness stand in the Bolton case and testifying against the Cotton Belt Ry. to the

injury of other brothers, and causing the Brotherhood at large to lose prestige with the Cotton Belt Ry." It is not to be supposed that if the action of the members of the subdivision in expelling appellant was based upon this charge alone it would be defended in any court, or that it would be contended that under any permissible latitude of discretion or authority, the members of the local subdivision would have been authorized, under any plea of good faith, to have placed such a construction upon the terms of the by-laws, as that under which they claim to have acted, so far as this specification of the charge is concerned. It can not be assumed that appellant in joining the brotherhood and in assenting to all of the provisions of its constitution and laws could ever have supposed or anticipated that a construction so at war with the laws of the land, with his duties as a citizen and a member of society, and involving such an abnegation of his inalienable rights as such, would be adopted, as would punish him for doing that which the law and his duty as a citizen required him to do.

The provision of the constitution, authorizing subdivisions of the Brotherhood to expel members for unbecoming conduct is not unreasonable, on the contrary is just and proper, but if there be written into it the construction which declared the act with which appellant was charged in the second specification of the charge against him, to be unbecoming conduct and ground for expulsion, there would be no hesitation in declaring it unreasonable, unlawful, and void.

It is charged by appellant that in expelling him the members of the division acted maliciously and with intent to injure him, and as showing that they acted maliciously and not in good faith, evidence was introduced tending to show that the charge of signing the Penniman letter was a subterfuge and a pretext, that there was no disposition on the part of the members to expel him on this ground, and that he would not have been expelled at all for this reason. This evidence shows that it was proposed to appellant that if he would promise to keep off of the witness stand and quit testifying against the railway company he would not be expelled, and that it was only upon his refusal to so promise, but agreeing that he would, when called upon, tell the truth, which was characterized by one of the members as "not sufficient," that it was determined to expel him. The uncontradicted testimony supports this contention of appellant; notably the letter of J. J. Bartholomew to the officers and members of division 201, dated November 15, 1902, and his letter to Arthur, grand chief engineer; the testimony of McCool, one of the defendants "that he named the proposition to Thompson that if he had promised then and there that he would not go on the witness stand against the company as an expert witness, that he would not have voted to expel him;" the fact that Nichols, who wrote the Penniman letter and got Thompson to sign it, and who was also under charges for doing so, made the required promise and got off with suspension for three months. If it be true that the expulsion of appellant was solely upon the ground set out in the second specification, and that the prosecution for writing the Penniman letter was merely for the purpose of affording a color or pretext for the expulsion, then it could not be said that the members acted in good faith and from proper motives in expelling him.

Appellant was not required to exhaust the remedies within the order to correct the wrongful action of the local division, before bringing this suit for damages. It was held by the Supreme Court in *Screwmen's Ben. Association v. Benson*, 76 Tex. 552, 13 S. W. 379, that such a course was necessary before resorting to the extraordinary remedy of mandamus to compel reinstatement, and for obvious reasons pertaining to the nature of that extraordinary remedy. In that case, however, which was a suit for damages as well as mandamus, the court especially limited its decision to that part of the petition which sought a mandamus. Upon a second appeal to this court in which the opinion of the court was by Justice Williams, it was expressly held that the remedy for damages could be prosecuted without having resorted to the appeal within the order. (*Benson v. Screwmen's Ben. Ass'n* (Tex. Civ. App.) 21 S. W. 562.) We are content to follow this opinion, which appears to us to be sound. Reinstatement in the order as a result either of an appeal to the next meeting of the Grand International District Convention, or failing that, by a writ of mandamus, would not have afforded appellant full redress for the injury to his property rights and other damages suffered on account of his expulsion from the brotherhood.

In the second opinion, which, like the first, was delivered by Judge Reese, much consideration was given to assignments of error which were overruled, and which need not be noted here. The question of evidence as to damages and their admeasurement was discussed as follows:

It was not error to instruct the jury to take into consideration, in estimating appellee's damages, the value of his insurance policy in the order. This policy was in favor of his wife for \$1,500, on which appellee had paid assessments for eight or nine years at the rate of \$1.50 to \$3.50 per month. It was a necessary consequence of his expulsion, if not reinstated in 12 months, that this policy should be forfeited without return of any part of the assessments paid. This was sufficient to show that the policy was of some pecuniary value to him. That the amount of this value could not be accurately estimated would not prevent its proper consideration by the jury in finding the amount of his damages. The same may be said with regard to other benefits of which appellee was deprived by reason of his expulsion, including the traveling card which enabled him to travel on all railroad trains in the United States, Mexico, and Canada. If this card was a mere gratuity, as claimed by appellant, and there was no obligation upon it or any other railway company to recognize it, or to allow appellee to ride upon it without paying his fare, nevertheless such cards were in general use, and did enable the holders thereof to ride upon trains without payment of fare, and for this reason it can not be said that the card was not of some pecuniary value, or that this, as an element of damages, was purely speculative. We can not agree with appellant's contention that a member of a society or beneficial order, such as was the Brotherhood of Locomotive Engineers, can not recover such actual damages as he may suffer on account of his wrongful and unlawful expulsion therefrom, but must be limited to nominal damages. Such damages may be of very uncertain value, and the amount thereof very difficult of ascertainment, but they are not more so than damages for mental or physical suffering,

loss of reputation, etc., which are freely allowed in many cases. The assignments of error from 7 to 10 can not be sustained.

By the twenty-second assignment appellant complains of the error of the court in overruling its motion for a new trial on the ground that the award of exemplary damages—\$2,000 is grossly in excess of the amount (\$500) awarded as actual damages. There is no fixed rule as to the proportion between actual and exemplary damages in cases where such damages are recoverable. (*Tynberg v. Cohen*, 76 Tex. 416, 13 S. W. 315.) We can not say that the proportion in the present case is so excessive as to lead to the conclusion that the jury were actuated by prejudice, passion, or other improper motive, in all of the circumstances of the case.

The court then took up the question of the ground of the liability of the railroad company in the case, the other defendants in the original action having been held by the trial court not to be liable in damages, on grounds that are not set forth.

The twenty-third assignment complains of the error of the court in overruling appellant's motion to arrest the judgment for the reasons that the jury having by their verdict acquitted the other defendants with whom, as alleged in the petition, appellant had conspired to have appellee expelled, the judgment against appellant should not be allowed to stand. This is not a case in which the conspiracy is the gravamen of the wrong, or where the wrong is one that can only be brought about by a conspiracy. The wrong is the expulsion of appellee from the lodge by the members thereof, and appellant is sought to be charged therewith, on the ground that this action was brought about by its advice and counsel. The defendants are simply charged as joint wrongdoers. The conspiracy charged is, in substance, that the wrong was done by the other defendants at the instigation of appellant. If the evidence and pleadings authorized the verdict against appellant, it is not a wrong of which it can complain that the jury, for reasons entirely incomprehensible to us, did not mete out to the other defendants the same measure of liability they imposed upon appellant, the evidence showing guilt upon their part. If appellee had sued appellant alone, it could not have complained. It could not claim contribution from the joint wrongdoers. The assignment is overruled.

The twentieth assignment of error presents the most serious question in the case, and we are of the opinion, after a careful review of the evidence, that it must be sustained. The assignment presents the question that the verdict and judgment against appellant railway company are against the great weight and preponderance of the evidence, and that they are without any evidence to support them. Substantially all of the evidence to show any connection of appellant, acting through its general superintendent, Green, with the expulsion of appellee from the order, is to be found in the testimony of Bartholomew and Green and is to be gathered from an interview between Green and Bartholomew and two other engineers in the employ of appellant. Bartholomew testified upon the former trial, and his testimony then, standing alone, can hardly be said to differ substantially from his testimony in the present record. It appears clear from the entire testimony in this record that Green's purpose in

sending for Bartholomew and his associates upon the occasion in question was to explain to them that one Tipton, a discharged engineer, had been discharged for not paying his debts when he was able to do so, and to exhibit to them certain letters in support of this fact. Tipton had complained to the brotherhood, of which he was a member, that he had been discharged for testifying against appellant. Green's purpose was to satisfy these parties that this was not true. After the Tipton matter had been disposed of, Green called the attention of Bartholomew and his two associates to the fact, as claimed by him, that appellee [Thompson], Nichols, and Kelton, ex-engineers, were soliciting lawsuits, against the railroad company for certain law firms using their traveling cards to get transportation as much as possible to solicit these lawsuits, and then going on the witness stand as experts against the company and against them. Green wanted to know if the brotherhood was going to tolerate or uphold this kind of business, and said substantially that if the brotherhood upheld the kind of conduct referred to he would feel justified, when a verdict of a jury in such a case showed negligence in an engineer, in discharging the engineer. Bartholomew testified that he understood Green to mean by "upholding that kind of work" if we upheld our members in chasing over the country on traveling cards belonging to the brotherhood soliciting lawsuits for any firm and then going on the witness stand as experts against the company and against us." Green's version of what took place at this interview, leaving out immaterial matters, is as follows: "I told the men that a number of men—I presumed some of them belonged to their brotherhood, I didn't know whether they did or not—were posing as expert witnesses in suits pending against the company. Were not only doing that, but were soliciting suits; that we had just recently settled the claim of Mrs. Penniman for the death of her husband, and at the time the settlement was made she told our claim agent Mr. Yowell that Mr. Kelton had been there to see her, and had urged her strongly not to settle with the company; that there was a firm of lawyers in town that would take her case on one-third, and that she was foolish to settle with the company in any way, shape, form, or manner, and that she had received a letter from Mr. Thompson and Mr. Nichols, which letter was signed as members of the division at Tyler, urging her not to settle the case with the company, but to put her case in the hands of a lawyer and sue. I told them those were acts we objected to. Settlement was made with Mrs. Penniman by the company some time ago—August, 1902. I can't give the exact day. Mr. Yowell had told me what I told these people. Told them that was the character of testimony we objected to, and it would have to stop. I also told them that in some States the laws were such that if an engineer was guilty of carelessness, negligence in stopping his train, as shown by the evidence given by some of these self-imposed experts, that the laws were such as would put them in the penitentiary, and in my opinion they were not only doing the company harm, but were doing the men a harm. I cited the Bolton case. I said to Mr. Bartholomew: 'You were an engineer in the Bolton case. With my experience for some 37 years of railroad work—some 15 years of that devoted to train work strictly—I have looked over the ground carefully, and have looked over your testimony very carefully. I have considered the weight of the train, speed, grade, and I fully believe

from my experience that you did everything that you possibly could to stop that train before striking the girl.' I said to him: 'The jury believed otherwise; they took the evidence of the expert witnesses, and they believed otherwise.' 'Now,' I said, 'Mr. Bartholomew, I have made up my mind to do this; to take the same view exactly that the jury takes in these cases. I can't do otherwise. I might be doing you an injustice, but suppose the jury says you are negligent in the Bolton case; that you could have stopped your train; and that you didn't stop it; that you didn't use everything at your command to stop that train. Suppose you run along two months or three months then later and have a similar accident, and it is shown you were careless in the Bolton case, and we have retained you in the service of the company, the jury would certainly censure the company for retaining careless men in its employ, and would unquestionably render a double verdict. I have made up my mind that I am going to take the same view of the case that the jury takes, and if they say that you are careless and negligent, and didn't stop your train—didn't use every means to stop your train—I am going to take the same view, and dismiss you from the service.' Then the discussion came up in regard to the action of Mr. Thompson and others in connection with the Penniman case, and it was discussed and taken for granted that they were not only engaged in soliciting the Penniman case, but in soliciting other cases, and that they were being employed by certain attorneys in town. Mr. Bartholomew then spoke up and said: 'Mr. Green, we have already had these matters up. I have a letter at home from our grand chief engineer, where we have put the matter up as to whether or not we could expel them for those acts.' He says: 'I have a letter from him and it is my intention—' I believe he said, 'to lay the matter before our division.' I said: 'What action you take in your division is nothing to us. We have nothing to do with your division in any way, shape, form, or manner. We are dealing with you as engineers, and whatever action you take by your division is something we have nothing to do, and no advice to give.' So far as I can recall that was about the substance of the interview at that time."

He further testified that he expected the members to use or exert their influence to stop that kind of work, but did not suggest in any way, directly or indirectly, that any action be taken by them as a brotherhood; that he gave them distinctly to understand that he had no advice to give, nor any suggestions to make, in reference to anything being done by the brotherhood as a body.

Now, looking to what was in fact done by the local lodge, which affords basis for this suit, in the trial and expulsion of appellee upon the grounds and for the offenses charged, and particularly in his expulsion upon the second specification, viz., testifying against the Cotton Belt Railway Company in the Bolton Case, it can not be said that the evidence supports a finding that appellant, acting through Green, its general superintendent, either instigated or suggested such action, or conspired with the members of the lodge therein.

On the view of the evidence here indicated, the judgment of the court below was reversed and judgment was rendered for the appellant company. A rehearing was granted, however, on which the court of appeals reversed itself and affirmed the decision of the

lower court on grounds that appear in the following extracts from the opinion delivered at that time:

Upon the hearing of this appeal the judgment of the trial court was reversed, and judgment rendered for appellant upon its twentieth assignment of error presenting the point that there was no evidence upon which appellant could be held liable to appellee for damages in the matter complained of in the petition. Reference to our former opinion will fully disclose the grounds upon which this conclusion is based. Both parties seem rather to have concluded that in our former opinion this question was settled against appellant's contention, which conclusion we can not say was not justified on their part. For this reason probably the question was not presented as fully in the briefs as it otherwise would have been. Upon further consideration of the question, in the light of the able and exhaustive brief and argument of counsel for appellee [Thompson] upon motion for rehearing, we have concluded that we were in error upon this point, and as we have concluded that none of the other assignments of error present grounds for reversal, our conclusion that we were in error in sustaining the twentieth assignment requires an affirmance of the judgment.

The evidence of the acts of Green, appellant's general manager, upon which its liability is predicated, is in the main set out in the original opinion. Other collateral matters, however, which we now think were fairly entitled to be considered by the jury, in determining appellant's liability, are not referred to. This evidence tends to show that Green's purpose was to prevent appellee Thompson from testifying generally, as an expert, in suits against appellant company, and there is more than a suggestion that this referred partly, at least, to his testimony in the Bolton Case, which had been once tried, with an adverse verdict against appellant, based to some extent, at least, on the appellee's testimony as an expert on the operation of air brakes. This case was still pending. Coupled with this was the complaint of Green that appellee and others had been running around stirring up litigation against appellant, and soliciting lawsuits for certain attorneys. Probably no legitimate complaint could be made of Green's desire and efforts to put a stop to this practice. But any attempt, by any means, to prevent his testifying in cases against appellant as an expert or otherwise, when called upon, or to interfere with the due administration of the law, in this particular, was unlawful. It not only affected appellee but the general public as well. Our views on this question are sufficiently indicated in our opinion upon the former appeal of this case. (91 S. W. 834 [supra, pp. 610-612].) There is no doubt that there was a distinct threat on the part of Green that if engineers, members of the Brotherhood of Locomotive Engineers, and not in the employ of the company, testified as expert witnesses in suits against the company, and upon such testimony there was a verdict against the company predicated upon the negligence of an engineer, he would "accept the verdict of the jury" and discharge the engineer, unless the brotherhood did something to put a stop to this practice. This was a suggestion to the brotherhood as an organization, and to the members of the lodge of which appellee was a member, to do something to put a stop to appellee's so testifying in any way against the company. It is not necessary that Green should have had in view the particular action

that was taken by the brotherhood. It is sufficient to show that his purpose was an unlawful purpose, and that he intended, and to some extent, by the influence of his threat to discharge, compelled some action on the part of the brotherhood either to enforce obedience to his expressed desire or to punish him for disobedience. It may be that Green, as general manager, would have been justified in discharging an engineer, or any other employee, in case it had been shown by the verdict of a jury that an accident, resulting in loss to the company, had been caused by his negligence, but it is impossible to see why this result should have been threatened only in cases where the verdict of the jury was predicated upon the testimony of an ex-engineer, member of the Brotherhood of Locomotive Engineers, and then only in case the brotherhood took no step to put a stop to such witnesses testifying as experts, unless for the purpose of controlling the action of such persons through the lodge of which they were members.

RAILWAY RELIEF ASSOCIATION—STATUS—LIABILITY OF RAILROAD COMPANY—*Phillips v. St. Louis and San Francisco Railroad Company, Supreme Court of Missouri, 111 Southwestern Reporter, page 109.*—Ida Phillips sued the railroad company named to recover damages for the death of her husband, who had been an employee in its service, and the St. Louis circuit court had given a peremptory instruction to find in favor of the defendant company. From this judgment an appeal was taken, the ruling of the court below being reversed and the case remanded for a new trial.

The principal point of interest is the relationship of the employing company and the "Employees' Hospital Association of the Frisco Line," a corporation separately incorporated by the leading officials of the railroad company. The company's contention was that it was in no way responsible for the negligence, if any, of the hospital association, that the latter is a distinct corporate entity, and is responsible for its own acts. Phillips had been an inmate of a hospital under the care of the hospital association, and the charge was made that he was negligently allowed to leave the same when in a known unfit condition, and by reason of such negligence had met his death.

The court held to the identity of interest of the two corporations, ruling that the railroad company was answerable for any acts of negligence of the association. The grounds for this position are found in part in the charter of the association, which in section 1 recites the name adopted and in section 2 announces the purpose of the association to be to support a "benevolent and charitable undertaking" in providing medical and surgical treatment, including hospital service, for the employees of the St. Louis and San Francisco Railroad Company and its associated companies. Section 4 declares that "The association shall not engage in business for pecuniary profit in any form, and shall not have any capital stock; the funds

necessary for carrying out its purpose shall be raised in such manner as may be provided by the by-laws." The rules formulated set forth that it is contemplated that for the consideration of the contribution paid monthly by the members of the association, a home and medical attendance for sick and injured members will be provided.

The rules sent out to employees upon the organization of the association are in part as follows:

The Employees' Hospital Association of the Frisco Line, having agreed to furnish necessary medical, surgical and hospital treatment to such employees of the St. Louis & San Francisco Railroad System as may become sick or injured while in the service of said companies, and to erect and maintain a hospital for the use of such sick and injured, and the employees of said system having agreed to contribute to a fund to be paid to said hospital association, to be used and expended by the association for such purpose, the following rules for the guidance of employees are hereby promulgated:

(3) Heads of departments and foremen will be furnished with blank certificates, and will issue them properly signed to such employees as are entitled to the benefit of the hospital association, and every employee receiving such certificate will be entitled to receive from the head of his department free transportation over the company's lines to the hospital, which, in case of emergency, when delay may be dangerous, will be provided by telegraph on application to the proper officer. These certificates are good only in the month for which they are issued.

(4) The company hereby donates to the hospital association the use of its telegraph lines to facilitate the care and treatment of sick or injured employees, and therefore all persons in the service of said companies, and all others are hereby notified that no bills for medical or surgical services, nursing, drugs or funeral expenses, will be paid by these companies unless first authorized by the general claim agent.

(5) In every case of personal injury to an employee, the conductor or foreman of the department in which the party is employed must report particulars as soon as possible by wire to division superintendent or head of department in which the accident occurs. State whether a surgeon has been summoned to attend, and if so, give such surgeon's name, and state further whether the injured man will be transported to general hospital. It will be the duty of the above officers to see that such telegraphic advice is promptly given them, and they will at once telegraph full particulars to superintendent, chief surgeon, and general claim agent.

(13) The persons who have been, or may hereafter be, appointed by the hospital association chief surgeon, assistants, hospital dispensary, division and local surgeons and physicians, are hereby appointed chief surgeon, assistants, division and local surgeons and physicians, as the case may be, of the St. Louis & San Francisco Railroad Company, and its leased and operated lines (while they hold such positions in connection with said hospital association), for the care and treatment under the rules above established of all passengers, citizens and nonemployees, who may be injured on the line of this company, and as such will be respected and assisted in the discharge of their professional duties when called upon.

Following are extracts from a circular signed by the vice-president and general manager of the company:

Patients received at the hospital will be provided free of charge, with everything necessary for their careful and comfortable treatment, including the services of the hospital surgeons or physicians, so long as they require surgical or medical attention and obey the rules established for their protection, but not longer than one year, without special authority from the trustees. For the purpose of carrying into effect the above system, and to enable all the employees to become members of and entitled to all the benefits and privileges of said association, notice is hereby given to all concerned that, commencing with the wages for month of July, 1899, which are payable in August, an assessment will be made on the pay rolls (including salary vouchers), as follows: [Then follow the rates of assessment.] This company will pay to said hospital fund as an assessment the sum of five hundred dollars annually, in monthly installments. All employees of the St. Louis & San Francisco Railroad System are entitled to hospital benefits under such rules and regulations as may be established for the government of the hospital. Rules and regulations governing the disposition and treatment of ill and injured employees will be issued and all employees should become familiar with those regulations, as they are established for the benefit of all. The surgeons and physicians of the St. Louis & San Francisco Railroad Company, will, on and after August 1, 1899, be under the control and direction of the chief surgeon of the hospital association, and all ill or injured employees will, on and after that date, be under the care and treatment of the hospital association.

B. F. YOAKUM,

Vice-President and General Manager.

Having set forth the facts, Judge Graves, who announced the opinion of the court, said:

From this circular it appears that no option is left an employee; but, on the other hand, defendant appropriates a certain amount of his wages and furnishes him medical treatment. From oral evidence it appears that the officers of this hospital association were officers of the defendant; the treasurer was the same; the employees made no formal application for admission as members, but only signed pay rolls with the deductions made as provided for in the foregoing documents.

We have set out this evidence, perhaps, in more detail than should have been done, but the relationship between these two corporations is an important one, and not confined to this case alone. To our mind it is immaterial as to the true character of the hospital association as indicated by its charter provisions. It has, however, but few, if any, of the earmarks of a voluntary benevolent association. Nor are there any earmarks of a public charity. What is received is paid for by the recipients. Under the weight of authority it can not be held to be a charitable institution. [Cases cited.] So that the rule that exempts such institutions from liability does not apply. Nor are institutions of the character of the one disclosed by this record exempted from liability by the mere employment of competent servants. They must go further and competently treat the patients received. In such case they occupy the position of ordinary

physicians and surgeons and are bound by the same rules, which are too familiar for repetition here. If they undertake to furnish the treatment, not as a charity, they stand in no different light from the ordinary physician. But this question is really beside the issues in this case. No one can read this record without concluding that, if the thin corporate shell of the hospital association is broken, the yolk therein contained is the defendant. By rule 1, defendant exempts certain mail carriers from assessment, and excludes them from benefits. By rule 3, the heads of the departments and the foremen of the defendant are furnished with blank certificates, which they fill and issue to employees entitled to receive benefits, and such heads of departments and foremen, the alter ego, of defendant, thus decide who shall be treated by the hospital association. By rule 5, the defendant's chief surgeon and general claim agent must be notified, and by rule 6, if the employee injured can be moved to the hospital, the chief surgeon and general claim agent must be notified. Why notify the general claim agent of defendant, if the two corporations were separate and distinct entities, in fact? That the hospital association is operated for the benefit of defendant as much or more than for the benefit of the employees is too apparent from this record. But, beyond all is rule 13, which makes the chief surgeon, and other surgeons of the hospital association, the chief surgeon and the local and division surgeons of the defendant. Eliminating all other matters, this rule 13 makes the chief surgeon and other surgeons the agent and employees of the defendant. But further showing that the hospital association, or its several surgeons, is but the alter ego of defendant, we have circular No. 35, supra, by which defendant says to all employees that they will be assessed to pay for this medical attention. No option is given an employee. By force of this rule, defendant says to an employee: "We will take so much of your monthly earnings, and in the event you are hurt or become sick, and in the judgment of the heads of the departments and the foremen in our employ you are entitled to medical treatment, we will furnish it to you through the hospital association." So that it becomes unnecessary in this case to break the extremely thin and attenuated corporate shell of the hospital association, and expose to open view the yolk therein contained. The hospital association, whether it in fact be a separate corporate entity, or in fact the defendant itself, masquerading under an assumed name, is at least the agent and employee of the defendant to perform these particular services. The defendant pays its said agent \$500 annually, and in addition it requires of its employees that they pay to it the remainder, and by it such sum is paid to the agent for these services. To say the least, this hospital association, together with all its surgeons and physicians, are but agents of defendant, and made so by express words in rule 13, supra. The negligence of these agents is the negligence of the defendant. As said in the case of *Orcutt v. Century Bldg. Co.*, 201 Mo. 424, 99 S. W. 1062, 8 L. R. A. (N. S.) 929, the defendant holds the purse strings of the hospital association. Not a dollar does it get save through defendant. Defendant pays for itself \$500, and the remainder is paid by the tribute which defendant levies upon its employees, which is collected and paid through defendant. The hospital system is a worthy one, and a well-taken, advance step; but, under the record in this case, such hospital association is but the agent of the defendant.

LAWS OF VARIOUS STATES RELATING TO LABOR, ENACTED SINCE JANUARY 1, 1904.

[The Tenth Special Report of this Bureau contains all laws of the various States and Territories and of the United States relating to labor, in force January 1, 1904. Later enactments are reproduced in successive issues of the Bulletin beginning with Bulletin No. 57, the issue of March, 1906. A cumulative index of these later enactments is to be found on page 633 et seq. of this issue.]

OREGON.

ACTS OF 1907.

CHAPTER 53.—*Accidents on railroads.*

SECTION 56. Every railroad shall, whenever an accident attended with loss of human life or limb, or with serious injury to person or property, occurs within this State upon its line of road or on its depot grounds or yards, give immediate notice thereof to the commission, stating the particulars thereof: *Provided*, That neither said report nor any part thereof shall be used as evidence or used for any purpose against such railroad so making such report in any suit or action for damages growing out of any matter mentioned in said report. In the event of any such accident the commission, if it deem the public interest requires it, shall cause an investigation to be made forthwith, which investigation shall be held in the locality of the accident, unless, for greater convenience of those concerned, it shall order such investigation to be held at some other place, and said investigation may be adjourned from place to place as may be found necessary and convenient. The commission shall seasonably notify an officer or station agent of the company of the time and place of the investigation. The cost of such investigation shall be certified by the commission and the same shall be audited and paid by the State in the same manner as other expenses are audited and paid.

Filed in the office of the secretary of state February 18, 1907.

CHAPTER 143.—*Hours of labor of employees on railroads.*

SECTION 1. Any person who owns or operates a steam railroad which is located wholly or partly in this State shall not permit or require any conductor, engineer, fireman, brakeman, or flagman, who, upon arrival at a terminal station, has been ten (10) or more consecutive hours on duty, to go again on duty until he has had at least ten (10) hours off duty. No conductor, engineer, fireman, brakeman, switchman, flagman, or telegraph operator shall be required or permitted to remain on duty more than fourteen (14) consecutive hours, except when longer consecutive service becomes necessary because of fires or wrecks or washouts or other unavoidable delays or unforeseen emergencies.

SEC. 2. The manager or superintendent of any person owning or operating a steam railroad located wholly or partly in this State, or any other official charged with the management or control or operation of such railroad, or any part thereof, shall be responsible, as well as the owner thereof, for a violation of the provisions of this act; and any one or more of said persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than \$100 nor more than \$500, or by imprisonment in the county jail not less than six months nor more than one year, or by both such fine and imprisonment.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 157.—*Examination and licensing of barbers.*

SECTION 1. Section 4 of an act to regulate the pursuit, business, art and avocation of a barber, * * * is hereby amended to read as follows:

Section 4. No person shall be permitted to pursue the business, art or avocation of a barber within the State of Oregon, nor be entitled to registration as a registered barber in this State, unless he shall have followed the occupation of a barber for at least three years, either as an apprentice or barber, or as apprentice and barber; any person

desiring to obtain a certificate under this act shall make application in writing to the State Board of Barber Examiners in the manner prescribed by said board, such application must be verified by the oath of the applicant; the applicant shall with his application pay to the treasurer of the State Board of Barber Examiners a fee of \$5, and shall present himself at the next regular meeting of the board for the examination of applicants, whereupon said board shall proceed to examine such person, and if satisfied that such applicant is qualified to practice the business, art and avocation of a barber, his name shall be entered by the board upon the register kept by them: *Provided*, That whenever it shall appear that the applicant has acquired his knowledge of the barber business in a barber school or college, the board shall be the judges as to whether or not such barber school or college is properly appointed and conducted so as to give sufficient training in such business; and the State Board of Barber Examiners and each member thereof is hereby authorized at all reasonable times during business hours to visit any and all barber schools or colleges in this State for the purpose of seeing whether or not students in such barber schools or colleges are receiving proper instruction and training, and to see that no provision of the law relating to the pursuit, business, art and avocation of a barber is being violated in any such school or college, and to see that such schools and colleges are conducted and managed in a skillful, cleanly and sanitary way. It shall be the duty of every proprietor, instructor or person in charge of every barber school or college in this State to keep posted in at least two conspicuous places in such barber school or college, so that the same may be seen and read by all students therein, copies of the by-laws of the said State Board of Barber Examiners and the rules and regulations governing barber shops, schools and colleges in the State of Oregon, adopted by the said board and in force in this State: *Provided, also*, That it shall be in the discretion of the said board to allow the time spent by any person in any barber school or college in this State to apply on the time required to be spent in following the occupation of a barber to entitle a person to registration under the act; and the said board is hereby empowered to adopt and prescribe reasonable rules and regulations governing the equipment and conducting of any barber school or college within the State of Oregon. A neglect or failure of the manager or person in charge of any barber school or college in this State to post and keep posted in at least two conspicuous places in such barber school or college, the by-laws of the State Board of Barber Examiners and the rules and regulations governing barber shops, schools and colleges in the State of Oregon, adopted by said board and in force in this State, shall be sufficient reason for the revocation by said board of the certificate of registration of any registered barber in charge of or giving instruction in any such barber school or college in the manner provided in section 8 of said act, and any violation of any of the rules and regulations governing barber shops and colleges in the State of Oregon adopted by the State Board of Barber Examiners and in force in this State by the person in charge of, or any instructor in any barber school or college in this State, shall be sufficient reason for the revocation by said board of the certificate of registration as a registered barber of the person guilty of such violation in the manner provided in section 8.

All persons making application under the provisions of this act shall be allowed to practice until the next regular meeting of the board.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 158.—*Factories and workshops—Inspection, etc.*

[See Bulletin No. 73, pp. 942-945.]

CHAPTER 161.—*Hours of labor of employees in mines.*

SECTION 1. No person who operates any underground mine yielding gold or silver or copper or lead or other metal shall permit or require any person to work in such underground mine for more than eight hours in any twenty-four hours and the hours of employment in such employment or work day shall be consecutive, excluding, however, any intermission of time for lunch or meals; but, in the case of emergency, where life or property is in imminent danger, persons may work in such underground mines for a longer time during the continuance of the exigency or emergency. This act shall not apply to mines in their first stages of development, such as tunnel work to a length of 200 feet, or shaft work to a depth of 150 feet, or to any surface excavation.

SEC. 2. Any person, persons, body corporate, general manager or employer who shall violate or cause to be violated any of the provisions of section 1 of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than fifty (\$50) dollars, nor more than three hundred (\$300) dollars, or by imprisonment of not less than 30 days, nor more than three months. And the court shall have discretion to impose both fine and imprisonment as herein provided.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 163.—*Payment of wages in scrip—Attorneys' fees in suits for wages.*

SECTION 1. No person or corporation engaged in any business or enterprise of any kind in this State shall issue, in payment of or as an evidence of indebtedness for wages due an employee, any order, check, memorandum or other acknowledgment of indebtedness, unless the same is negotiable, and is payable without discount in cash on demand at some bank or other established place of business in the county where the same is issued; and such person or corporation shall, upon presentation and demand, pay any such order, check, memorandum, or other acknowledgment of indebtedness, in lawful money of the United States: *Provided, however,* That nothing herein contained shall in any way limit or interfere with the right of any such employee to accept from any such person or corporation, as an evidence or acknowledgment of indebtedness for wages due him, a negotiable instrument, payable at some future date with interest.

SEC. 2. Whenever an employer discharges an employee, all wages earned and unpaid at the time of such discharge, shall become due and payable immediately. When any such employee, not having a contract for a definite period, shall see fit to quit or resign his employment, all wages earned and unpaid at the time of such quitting or resignation shall become due and payable immediately: *Provided,* Such employee shall have given not less than three days' notice of his intention to quit his employment; but when any number of employees enter upon a strike, the wages due such striking employees at the time of entering upon such strike, shall not become due and payable until the next regular pay day after commencement of such strike: *Provided,* That the time between the commencement of the strike and such next regular pay day does not exceed a period of thirty days.

SEC. 3. In any action for the collection of any such order, check, memorandum, or other acknowledgment of indebtedness, or in any action by an employee against an employer for the collection of wages, if it is shown that such order, check, memorandum, or other acknowledgment of indebtedness, or said wages were not paid for a period of forty-eight hours after proper demand for the payment thereof, the court may, in its discretion, upon entering judgment for the plaintiff, include in such judgment, in addition to the costs and disbursements otherwise prescribed by statute, a reasonable sum for attorney's fees for prosecuting said action: *Provided,* Such employee shall have given not less than three days' notice of his intention to quit his employment.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 190.—*Hours of labor of employees on public works.*

SECTION 1. Eight hours shall constitute a day's work for all laborers and mechanics now employed or who may hereafter be employed by the State of Oregon, or by any county in said State, unless otherwise ordered as to any county by vote of the legal electors of said county, except in cases of extraordinary emergency when it may be necessary to work more than eight hours per calendar day for the protection of property or human life: *Provided,* That in all such cases such laborers and mechanics so employed and working to exceed eight hours per calendar day shall, for such overtime, be paid at the rate of one and one-half times the rate of pay allowed for the same amount of time during the eight hours' service: *And provided, further,* That the provisions of this act shall not apply to any employees of any State institution except the penitentiary.

SEC. 2. Any person violating any of the provisions of this act shall for each offense be punished by a fine of not less than \$100 nor more than \$1,000, or by imprisonment not more than six months, or by both fine and imprisonment, in the discretion of the court.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 191.—*Railroads—Overhead wires.*

SECTION 1. It shall hereafter be unlawful for any corporation or person to string any wire, electric or other, over the tracks of any railroad company, except at such places and in such manner as shall be authorized and approved by the county court of the county wherein such crossing with such wire is proposed, said county court sitting for the transacting of county business, and any corporation or person desiring to so string any wire shall give such railroad company notice in writing of the place and manner in which it desires to string the same, and the place where and the time when it will apply to said county court sitting for the transaction of county business for approval and authority as above required, which notice shall be served at least ten days before the time of hearing of such application.

SEC. 2. The county courts of the several counties in the State of Oregon shall, as soon as possible after the passage of this act, either by personal examination or otherwise, obtain information as to all places where the tracks of railroad are crossed by wires strung over said tracks, and whenever in its judgment such wires should be raised to a greater height, or other thing done with reference thereto to guard against accidents, shall order such change or changes to be made, and shall apportion any expense incident thereto between the companies or persons affected as may be deemed just and reasonable: *Provided*, That in no case shall the height of any wire strung or to be strung across or over such or any railroad tracks be less than twenty-five feet, excepting trolley wires, which shall not be less than twenty-three feet from the top of the rail of said railroad tracks.

SEC. 3. It shall be the duty of every corporation and person to whom an order made by the county court of the respective counties in said State under this act shall be directed, to comply with such order in accordance with its terms, and for any neglect to so comply therewith any such corporation or person shall be liable to a penalty of \$100, and to a like penalty for every ten days during which said neglect shall continue. Any such penalty may be recovered by an appropriate action instituted by the county where such violation or disobedience has been committed, and said penalty shall be recovered by said county, and it shall be the duty of the prosecuting attorney of the district in which said county is located to bring and prosecute any such action in the name of the county at the request of the said county court sitting for the transaction of county business.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 192.—*Coercion of employees—Choice of boarding houses, stores, etc.*

SECTION 1. It shall be unlawful for any person or corporation to compel by threats or intimidation, or threats of discharge, or to use any means to compel an employee against his will to board at any particular hotel, boarding house or other place where lodgings or board may be provided, or to require an employee to purchase goods and supplies at any particular store.

SEC. 2. Any person violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine in a sum of not less than twenty-five (\$25) dollars nor more than one hundred (\$100) dollars, or by imprisonment in the county jail not less than ten nor more than thirty days, or by both such fine and imprisonment.

Filed in the office of the secretary of state, February 25, 1907.

CHAPTER 200.—*Employment of women—Hours of labor—Seats.*

[See Bulletin No. 73, pp. 779, 780.]

PENNSYLVANIA.

ACTS OF 1907.

ACT No. 67.—*Protection of employees on buildings.*

SECTION 1. Whenever complaint is made to the mayor, director of public safety, superintendent of police, or other persons in charge of the police force, in any city of the first, second or third class in this State, that the scaffolding, or slings, hangers, blocks, pulleys, stays, braces, ladders, irons, or ropes of any sling or stationary scaffolding, used in the construction, alteration, repairing, painting, cleaning, or pointing of buildings, within the limits of any city aforesaid, are unsafe, or liable to prove dangerous to life or limb of any person, such mayor, director of public safety, superintendent of police, or other person in charge of the police force, shall immediately cause an inspection to be made of such scaffolding, or the slings, hangers, blocks, pulleys, stays, braces, ladders, irons, ropes or other parts connected therewith. If, after examination, such scaffolding or any of such parts is found to be dangerous to life or limb, the mayor, director of public safety, superintendent of police, or other persons in charge of the police force, shall prohibit the use thereof, and require the same to be altered and reconstructed so as to avoid such danger. The person directed to make such inspection shall attach such certificate to the scaffolding, or the slings, hangers, irons, ropes, or other parts thereof, examined by him, stating that he has made such examination, and that he has found it safe or unsafe, as the case may be. If he declare it unsafe, he shall at once, in writing, notify the person responsible for its erection of the fact, and warn them against the use thereof. Such notice shall be served personally

upon the person responsible for the erecting, or by conspicuously affixing it to the scaffolding or part thereof to be declared unsafe. After such notice has been so served or affixed, the person responsible therefor shall immediately remove such scaffolding or part thereof, and alter or strengthen it in such manner as to render it safe, in the discretion of the person who has examined it, or of his superiors. Any person whose duty it is to examine or test any scaffolding or part thereof, as required by this act, shall have free access at all reasonable hours to any building or premises containing them, or where they may be used.

SEC. 2. If any scaffolding or staging, swung or suspended from an overhead support or supports, shall be more than ten feet from the ground or floor, the same shall be deemed unsuitable and improper, and as not giving proper protection to the life and limb of any person employed or engaged thereon, unless such scaffolding or staging shall, when the same is in use, have a safety rail, rising at least thirty-four inches above the floor or main portion of such scaffolding or staging, and extending along the outside thereof the entire length of the outside thereof, properly attached thereto, and unless such scaffolding or staging shall be provided with braces so as to sustain the weight of a man's body leaning against it, and prevent the scaffolding or staging from swaying from the building or structure.

SEC. 3. All swinging and stationary scaffolding shall be so constructed as to bear four times the maximum weight to be dependent therefrom or placed thereon when in use, and not more than three men shall be allowed on any swinging scaffolding at one time.

SEC. 4. Any person who violates, or omits to comply with, any of the foregoing provisions of this act, or who suffers or permits the use of any article or scaffolding declared by a proper officer to be defective, or who destroys or defaces any notice posted in accordance with the provisions of this act, or who hinders or obstructs any officer who may be detailed to enforce its provisions, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine not exceeding five hundred dollars or by imprisonment not exceeding six months, or both, at the discretion of the court.

Approved the 15th day of April, A. D. 1907.

Act No. 90.—*Employment offices.*

SECTION 1. The director of the department of public safety, in cities of the first and second class in this Commonwealth, shall, upon petition, license and regulate employment agencies therein, as hereinafter provided.

SEC. 2. The term "person," used in this act, means and includes any individual, company, association, partnership, corporation or their agents. The term "licensed person" means and includes any person licensed under the provisions of this act. The term "employment agency" means and includes any person who procures, offers to procure, promises to procure, attempts to procure, or aids in procuring, either directly or indirectly, help or employment for another, where any fee, remuneration, privilege, profit, or any consideration, of any nature whatsoever, is promised, paid, or received therefor, either directly or indirectly. The term "fee" means and includes money, or a promise to pay money, and every form of and nature of remuneration, privilege, profit, or consideration, promised, paid, or received, directly or indirectly, for any service, of whatsoever nature, performed, offered to be performed, or promised to be performed by such employment agency. The term "privilege" means and includes the furnishing of food, liquors, supplies, tools, and shelter to laborers. The term "applicant for employment" means any person seeking work, employment, or engagement of any lawful character. The term "applicant for help" means any person or persons seeking help, employees, or performers in any legitimate enterprise; and the meaning of the terms "employment" or "help" shall not be limited to mean manual occupation, but shall include professional, and all legitimate, service.

SEC. 3. No person shall open, operate, maintain, or conduct, either temporarily or otherwise, any employment agency, or perform any of the acts authorized to be performed by an employment agency, in any city of the first or second class, without procuring a license from the director of public safety, as provided herein. The application for a license must be made in a form prescribed by the director of public safety, and may be made at any time; but every such license shall expire on the first day of October following its issue, unless sooner surrendered or revoked. Every applicant for a license shall furnish to the director of public safety, at the time of making his application for a license, a statement containing the full name of the applicant, his place of residence, and a description of the premises on which he desires to conduct an employment agency. If the applicant is a corporation, the application must specify also the names and addresses of the president, treasurer, and secretary thereof, or other officers performing corresponding duties under different

names; and the director of public safety may, in his discretion, require the names and addresses of all the officers, including the directors, of any corporate applicant for a license. If the applicant is a partnership or unincorporated association, the names and addresses of all the members thereof must be specified in the application. The application must be subscribed by the applicant or applicants therefor, if natural persons; and if a corporation, in the corporate name, by the president or chief officer thereof, attested by the secretary or assistant secretary, with the corporate seal attached. Each application must state that the applicant or applicants is or are the person or persons who have the sole beneficial interest in the business established or to be established, and must have attached thereto an affidavit that all the statements contained in the application are true. The statements contained in said application for a license shall be received in evidence in all courts of this Commonwealth and shall be competent and sufficient prima facie evidence of all the facts stated therein; and for each and every misstatement in said application a city magistrate, justice of the peace, or any inferior magistrate, having original jurisdiction in criminal cases, shall have summary jurisdiction, and the right to impose, for each such misstatement, a fine of twenty-five (25) dollars. The application for a license shall be accompanied by the affidavit of two freeholders, of the ward in which the agency is sought to be established, that the applicant is a person of good moral character; or, if a corporation, that the officers thereof, and those under whose direction the business of the employment agency is to be carried on, are persons of good moral character; and the director of public safety may also require any other statements to be made in the application which he may deem necessary. A fee of fifty (50) dollars, for the use of the city, shall accompany each application for a license, which fee shall be returned if the license is not granted. Every application for a license shall be filed not less than one week prior to the granting thereof, and notice thereof shall be posted in the office of the director of public safety from the date of filing until the date of final action thereon, and a written protest may be made by any person against the granting of such license. The director of public safety shall either grant or reject said application for a license within thirty days from the time of the filing thereof.

SEC. 4. Each applicant shall file with his application for a license a bond, in form approved by the director of public safety, in the penal sum of one thousand (\$1,000) dollars, with one or more sufficient sureties, conditioned that the applicant will not violate any of the duties, terms, conditions, provisions, or requirements of this act. If any person shall be aggrieved by the misconduct of any such licensed person, in violating any of the provisions of this act, and shall recover judgment against him therefor, such person may, after the return unsatisfied, either in whole or in part, of any execution issued upon said judgment, maintain an action in his own name, upon the bond of said licensed person, in any court having jurisdiction of the amount claimed, provided such court shall, upon application made for the purpose, grant leave to bring such action.

SEC. 5. The license certificate shall be furnished by the director of public safety, and shall be printed in a suitable manner. Such license shall not be used by any other than the person to whom it is issued, or at any place other than that designated in the certificate, and shall not be transferred or assigned to any other person. If a person holding a license certificate, authorizing him to conduct an employment agency under the provisions of this act, against whom no complaint, prosecution, or action is pending on account of any violation thereof, shall voluntarily surrender such license certificate, provided it has at least one month to run, the director of public safety shall refund to the person the sum of four dollars for each month which the certificate has yet to run, commencing with the first day of the month succeeding the one in which said license certificate is surrendered, unless such surrender be on the first day of the month. Every licensed person shall post his license certificate in a conspicuous place in his agency. If for any cause, as hereinafter provided in sections nine, ten, and eleven, such license is revoked, the director of public safety shall not issue another license to said person, to his representative, to his agent, or to any person with whom he is to be associated in the employment agency business. Whenever such license is revoked for violation of other provisions of this act, the director of public safety may, in his discretion, reissue a license, but not within a period of six months.

SEC. 6. No such agency shall be located on premises, or in connection with a building or premises, where intoxicating liquors are sold to be consumed on the premises, excepting cafes or restaurants in office buildings. No person shall procure or offer to procure help or employment in a room or rooms adjoining, either laterally or vertically, a room where intoxicating liquors are sold to be consumed on the premises, and no licensed person shall furnish intoxicating liquors to any applicant for employment.

SEC. 7. Every licensed person shall keep accurate records, in the English language, in a form approved by the director of public safety, in which he shall enter or cause to be entered the name and address of every applicant to whom employment is promised or offered, the date of such application, the amount of the fee demanded, charged, or received, and, whenever possible, the name and address of former employers of persons to whom such applicant is known. In a separate register said licensed person shall enter or cause to be entered the name and address of every applicant to whom help is promised, the date of such application, the kind of help requested, the names of persons sent, with the designation of the one employed, the amount of the fee received, and the rate of wages agreed upon. The said records shall be open, during business hours, to inspection by the director of public safety, his deputy, or duly appointed inspectors, and it shall be unlawful for any person to make any false entry therein.

SEC. 8. The rate of fees which such licensed person intends to charge must be filed with the director of public safety, and a plain and legible duplicate, signed by the director of public safety, shall be conspicuously posted in each room of such agency. No such licensed person shall charge a fee in excess of the rates aforesaid, or receive or accept any valuable thing or gift as a fee or pledge, or in lieu thereof. The fee charged applicants for help or employment shall be good for a period of one month, and no additional or other fee shall be charged for any service rendered by such agency during this time, except when the employment or engagement is of a temporary nature, not to exceed in any single contract one month, then the fee shall not exceed ten per centum of the salary paid. Failure of said applicant for help to notify said licensed person that such help has been obtained, through means other than said agency, shall entitle said licensed person to retain the entire fee. In case an applicant for help or employment shall not obtain such through said agency, such licensed person shall, on demand, repay the full amount of the fee paid therefor, allowing a time which the director may deem reasonable to determine the fact of the applicant's failure to obtain help or employment. When, however, upon evidence satisfactory to the director of public safety, it appears that said licensed person has in good faith made an honest attempt to procure help or employment for said applicant, he will be entitled to retain, of such fee paid, an amount not exceeding fifty cents. It shall be the duty of such licensed person to give to every applicant for employment or help, from whom a fee shall be received, a receipt, in which shall be stated the name and address of said applicant, the date and amount of the fee, the period for which the fee is good, and the kind of employment or help for which it is paid. No fee or other payment shall be accepted by any such licensed person for any other purpose, except as herein provided, and no such licensed person shall divide fees with, or pay commissions to, persons to whom applicants are sent for employment. Every such licensed person shall post in a conspicuous place, in each room of his agency, a plain and legible copy of this act, which shall be printed in languages which persons commonly doing business with such agency can understand, and upon which appears the name and address of the office of the director of public safety, and advising that any misconduct on the part of any one connected with such agency should be reported to him.

SEC. 9. Whenever an applicant for employment is sent out of the city in which said agency is located, under contract for labor, he shall be furnished, at the time the agreement is consummated, and in a language which he can understand, a memorandum showing his destination, written in full, the name and address of his employer, the nature of the work to be performed, hours of labor (except in household), wages offered, and the terms of transportation. A duplicate shall be filed in said agency. Every such licensed person shall give to every applicant for employment, sent to a place within the city, a card containing the printed name and address of such employment agency, together with the name and address of the person to whom said applicant is sent for employment. No such licensed person shall furnish employment to any child, in violation of the laws regulating the labor of children or their compulsory attendance at school.

SEC. 10. No such licensed person shall furnish any female employee for immoral purposes; or send or cause to be sent any female employees to enter, as servant or inmate, or for any purpose whatsoever, any place of bad repute, house of ill fame or assignation house, or any house or place of amusement kept for immoral purposes, the character of which such licensed person could have ascertained upon reasonable inquiry. No such licensed person shall knowingly admit, or allow to remain in said agency, any person of bad character, prostitute, gambler, or intoxicated person.

SEC. 11. No such licensed person shall publish or cause to be published any false or fraudulent or misleading advertisement or notice relating to his employment agency; nor shall any such licensed person advertise his employment agency by

means of cards, circulars, or signs, in newspapers or other publications, unless all such advertisements shall set forth the name of the agency, as such, and its address; nor shall any such licensed person use any letter heads, receipts or blanks not containing the name and address of such agency. No such licensed person shall give any false information, or make any false representation, concerning employment to any applicant, either for employment or help. No such licensed person shall send out any applicant without having obtained a bona fide order from the prospective employer, to whom said applicant is sent.

SEC. 12. The enforcement of this act, in each city of the first or second class, shall be intrusted to the director of public safety of said city, who is hereby authorized and empowered to appoint a deputy, who shall exercise all the powers of the director of public safety conferred by this act, and one or more inspectors, who shall have no duties to perform other than the enforcement of this act. The director of public safety shall also appoint such clerks and other assistants as may be required to enforce this act. The salaries of such deputy inspector, or inspectors, clerks, and assistants, shall be determined and provided by the councils of said city. Each agency, at least once in two months, shall be visited by an inspector, who shall make a written report thereof to the director of public safety, which shall be preserved in his office. All complaints shall be considered and disposed of by the director of public safety, or his deputy, after an investigation by an inspector under his direction. Complaints against any such licensed person may be made, orally or in writing, to the director of public safety or to his deputy, and notice of such complaint shall forthwith be given to said licensed person by the director of public safety or his deputy, and a hearing thereon shall be given by the director of public safety or his deputy, within three days after notice is given to said licensed person. A record shall be kept of all such complaints and hearings. The director of public safety or his deputy shall refuse to issue, or shall revoke, any license for a violation of any of the provisions of this act; but reasonable opportunity shall be given an applicant or the licensed person to defend himself. When it is shown to the satisfaction of the director of public safety or his deputy that any such licensed person is guilty of any immoral or fraudulent act, in connection with the conduct of his agency, it shall be the duty of the director of public safety or his deputy forthwith to revoke his license.

SEC. 13. Any person who shall open or conduct an employment agency, in any city of the first or second class, without procuring a license as required by this act, shall be guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine of not less than fifty nor more than five hundred dollars, or by imprisonment not exceeding one year, or both, at the discretion of the court.

Any licensed or other person who violates any of the provisions of this act shall be guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine of not more than one hundred dollars, or by imprisonment for not more than one year, or both, at the discretion of the court.

SEC. 14. The provisions of this act shall not apply to agencies which procure employment for school teachers exclusively; nor to registries of any incorporated association of nurses; nor to bureaus conducted by recognized medical institutions; nor to agencies exclusively engaged in procuring executive, technical, clerical, or sales positions for men only; nor to departments or bureaus maintained by persons, firms, or corporations, or associations, for the purpose of obtaining help for themselves, where no fee is charged the applicant for employment.

Approved the 25th day of April, A. D. 1907.

ACT No. 162.—Payment of wages due deceased employees.

SECTION 1. From and after the passage of this act, it shall be lawful for any employer in this Commonwealth, at any time not less than thirty days after the death of his employee, to pay all wages due to such deceased employee to the wife, children, father or mother, sister or brother (preference being given in the order named) of the deceased employee, without requiring letters of administration to be issued upon the estate of said deceased employee, where such wages due do not exceed seventy-five dollars in amount: *Provided, however,* That if such deceased employees shall not leave a wife, children, father, mother, sister, or brother surviving him, then it shall be lawful for said employer to pay the wages due such deceased employee to the creditors, as follows: Undertaker, physician, boarding house keeper, and nurse, each his or her pro rata share of wages, not exceeding seventy-five dollars, due the deceased, upon affidavit of fact furnished, without letters of administration being issued.

SEC. 2. The payment of such wages shall be a full discharge and release to the employer from the wages so due and paid.

Approved the 23d day of May, A. D. 1907.

ACT No. 167.—*Civil service—Labor service.*

SECTION 9. All examinations for positions in the classified service shall be practical in their character, and shall relate to such matters, and include such inquiries, as will fairly and fully test the comparative merit and fitness of the persons examined to discharge the duties of the office or employment sought by them. All examinations shall be open to all applicants who have fulfilled the preliminary requirements, stated in section ten of this act. The examinations of applicants for employment as laborers shall relate to their capacity for labor, their habits as to sobriety and industry, and their experiences in the kind of work for which they apply. All applicants for any position in the classified service may, subject to regulations adopted by the civil service commission, be required to submit to a physical examination before being admitted to the regular examinations held by the commission. * * *

SEC. 19. The labor class shall include ordinary, unskilled laborers. Vacancies in the labor class shall be filled by appointment from lists of applicants registered by the civil service commission. Preference in employment from such lists shall be given according to regulations to be prescribed by the commission. The commission may establish separate labor lists for various institutions and departments. The commission shall require an applicant for registration for the labor service, before he can be registered, to furnish such evidence or to pass such examinations as it may deem proper with respect to his age, residence, physical condition, capacity for labor, sobriety, industry, and experience in the kind of work for which he applies.

Approved the 23d day of May, A. D. 1907.

ACT No. 206.—*Payment of wages of miners—Removing or defacing checks, etc.*

SECTION 1. Any person who willfully shall, from any loaded coal car in or about any mines, breaker, or yard, in this Commonwealth, take, remove, sever, carry away, obliterate, or destroy any ticket, card, tin slip, or other device or sign, used to indicate or identify the person or persons to whom credit or pay is or shall be due for the mining of coal in said car, or for the loading of said car, for the purpose of depriving such person or persons from getting credit or pay for said car, or for the purpose of defrauding such person in any manner, shall be deemed guilty of misdemeanor, and, upon conviction therefor, shall be sentenced to pay a fine not exceeding one hundred dollars or to undergo an imprisonment not exceeding one year, or either or both, at the discretion of the court; and the jury trying the case may infer such intent from the fact of taking, removing, carrying away, severing, obliterating, or destroying, in any manner, of such tickets, card, tin slip, or other device or sign, as aforesaid.

Approved the 28th day of May, A. D. 1907.

ACT No. 237.—*Employment of children—School attendance.*

[See Bulletin No. 73, pp. 782, 783.]

ACT No. 241.—*Employment of children—School attendance.*

[See Bulletin No. 73, pp. 783, 784.]

ACT No. 250.—*Accidents on railroads.*

SECTION 13. The [state railroad] commission shall investigate the cause of any accident on the lines or property of any common carrier, resulting in loss of life or injury to persons, within thirty days of the happening of said accident, when, in their judgment, said accident shall require investigation; and shall advise said common carrier of the result of said investigation, within sixty days from the happening of said accident, and shall include the result of said investigation in their reports. Before making any such examination or investigation, under this section, reasonable notice shall be given to the corporation, person, or persons, conducting and managing such common carrier, of the time and place of commencing the same. The general superintendent or manager of every common carrier shall inform the commission of any such accident immediately after its occurrence.

* * * * *

Approved the 31st day of May, A. D. 1907.

ACT No. 328.—*Liability of railroad companies to workmen not employees.*

SECTION 1. The first section of an act, entitled "An act relating to railroad companies and common carriers; defining their liability, and authorizing them to pro-

vide means of indemnity against loss of life and personal injury," approved April fourth, eighteen hundred and sixty-eight, which reads as follows:

"When any person shall sustain personal injury or loss of life while lawfully engaged or employed on or about the roads, works, depots, and premises of a railroad company, or in or about any train or car therein or thereon, of which company such person is not an employee, the right of action and recovery in all such cases against the company shall be such only as would exist if such person were an employee: *Provided*, That this section shall not apply to passengers," is hereby repealed.

Approved the 10th day of June, A. D. 1907.

ACT No. 329.—*Liability of employers for injuries to employees.*

[See Bulletin No. 74, pp. 81, 82.]

PHILIPPINE ISLANDS.

ACTS OF U. S. PHILIPPINE COMMISSION—1907.

ACT No. 1582.—*Protection of employees as voters.*

SECTION 29.

* * * * *

Any person who influences or attempts to influence a voter to give or to withhold his vote at an election by threatening to discharge such voter from his employment or to reduce his wages, or by promising to give him employment at higher wages, and any person who discharges any voter from his employment or reduces his wages for giving or withholding his vote at an election, shall be punished by imprisonment for not less than thirty days nor more than one year, or by a fine of not less than two hundred pesos nor more than five hundred pesos, or both, in the discretion of the court.

* * * * *

Enacted, January 9, 1907.

ACT No. 1602.—*Examination, etc., of steam engineers—Coast trade.*

SECTION 1. Section one of act numbered seven hundred and eighty, * * * is hereby amended to read as follows:

Section 1. A board is hereby created, to consist of the insular collector of customs, the supervising inspector of hulls and boilers, and assistant inspector of hulls, one person holding an unexpired license as master in the Philippine coastwise trade, and one other competent person, whose duty it shall be to examine and certify for licenses all applicants for licenses as watch officers and engineers upon vessels of the Philippine Islands. The insular collector of customs shall be president of the board ex officio, and any three members thereof shall constitute a quorum for the transaction of business. This board shall be known and referred to as the "Board on Philippine Marine Examinations." The insular collector of customs is authorized to designate the persons who shall constitute the board, from among the classes above enumerated, and to detail from the clerical force provided for the bureau of customs a competent person to serve as secretary of the board without additional compensation: *Provided*, That nothing in this section shall be construed to make such secretary a member of the board for any other purpose: *And provided further*, That the expenses of the said board shall be paid from the regular appropriation for the bureau of customs.

Enacted, March 12, 1907.

RHODE ISLAND.

ACTS OF 1907.

CHAPTER 1429.—*Factories and workshops—Supply of drinking water.*

[See Bulletin No. 73, p. 964.]

CHAPTER 1458.—*Employment of children—Age limit.*

[See Bulletin No. 73, p. 792.]

SOUTH CAROLINA.

ACTS OF 1907.

ACT No. 233.—*Hours of labor in cotton and woolen mills.*

[See Bulletin No. 73, p. 796.]

ACT No. 259.—*Emigrant agents.*

SECTION 1. No person shall carry on the business of an emigrant agent in this State without having first obtained a license therefor from the county treasurer of each county in which he solicits emigrants. Any person shall be entitled to a license, which shall be good for one year, upon payment into the county treasury, for the use of said county, two thousand dollars in each county in which he operates or solicits emigrants, for each year so engaged. Any person doing business of an emigrant agent without having first obtained said license, shall be deemed guilty of a misdemeanor and, upon conviction, shall be punished by fine, not less than one thousand dollars and not more than five thousand dollars, or may be imprisoned in the county jail or on the public works not less than four months, or confined in the state prison, at hard labor, not exceeding two years for each and every offense, within the discretion of the court.

SEC. 2. The term "emigrant agent," as contemplated in this act, shall be construed to mean any person engaged in hiring laborers or soliciting emigrants in this State, to be employed beyond the limits of the same.

Approved the 20th day of February, A. D. 1907.

SOUTH DAKOTA.

ACTS OF 1907.

CHAPTER 135.—*Employment of children.*

[See Bulletin No. 73, p. 797.]

CHAPTER 219.—*Liability of railroad companies for injuries to employees.*

[See Bulletin No. 74, pp. 85, 86.]

CHAPTER 220.—*Hours of labor of employees on railroads.*

SECTION 1. No common carrier, nor any officer nor agent thereof, shall require or permit any employee engaged in or connected with the movement of any train to remain on duty more than sixteen consecutive hours, or require or permit any such employee who has been on duty sixteen consecutive hours to go on duty without having had at least ten hours off duty, or require or permit any such employee who has been on duty sixteen hours in the aggregate in any twenty-four hour period to continue on duty or to go on duty without having had at least eight hours off without duty within such twenty-four hour period.

SEC. 2. In any prosecution for a violation of the preceding section, it shall be a sufficient defense to show that the employee was prevented from reaching his terminal by any casualty occurring before he started on his trip, or by accident or unexpected delay of trains scheduled to make connections with the train on which such employee was serving.

SEC. 3. Any common carrier and any officer or agent thereof violating any of the provisions of section one of this act shall, upon conviction thereof, be punished by a fine of not less than \$100 or more than \$1,000.

SEC. 4. The board of railroad commissioners shall fully investigate all cases of violation of this act, and for that purpose may subpoena witnesses, administer oaths, interrogate witnesses, take testimony and require the production of books and papers either within or without the State, and shall lodge with the proper state attorneys information of such violations as may come to its knowledge.

SEC. 5. The provisions of this act shall not be applied to relief or wreck trains.

Approved, February 13, 1907.

CUMULATIVE INDEX OF LABOR LAWS AND DECISIONS RELATING THERETO.

[This index includes all labor laws enacted since January 1, 1904, and published in successive issues of the Bulletin, beginning with Bulletin No. 57, the issue of March, 1905. Laws enacted previously appear in the Tenth Special Report of the Commissioner of Labor. The decisions indexed under the various headings relate to the laws on the same subjects without regard to their date of enactment and are indicated by the letter "D" in parentheses following the name of the State. Opinions of the Attorney-General on the construction, etc., of labor laws are similarly indexed, and are indicated by the abbreviation "Op." in parentheses.]

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Accident insurance. (<i>See Insurance, accident.</i>)			Assignment of wages—Concluded.		
Accidents in factories:			Connecticut.....	62	331
New Jersey.....	58	1015	Illinois.....	61	1075
New York.....	69	461	Iowa.....	68	236
Pennsylvania.....	65	359	Louisiana.....	70	763
Accidents in mines:			Maryland.....	70	767, 768
Ohio.....	59	379	Massachusetts.....	61	1067
United States.....	77	414	Minnesota.....	70	769, 770
Accidents on railroads:			New York.....	63	584
Alabama.....	73	1043	Vermont.....	57	712
Colorado.....	73	1049	Wisconsin.....	71	396
Indiana.....	74	274, 275		67	915
Iowa.....	74	276	Bakeries, hours of labor of employees in. (<i>See Hours of labor.</i>)		
Massachusetts.....	70	771	Bakeries, inspection of. (<i>See Inspection, etc.</i>)		
Minnesota.....	63	581	Barber shops, inspection, etc., of:		
Montana.....	76	1023	New Hampshire.....	76	1036
Nevada.....	72	647	Barbers, examination, etc., of.		
New Jersey.....	76	1032	(<i>See Examination, etc.</i>)		
New York.....	77	399	Benefit societies:		
North Dakota.....	77	406	South Carolina (D).....	77	386-388
Ohio.....	77	411	Blacklisting:		
Oregon.....	70	779	Arkansas.....	65	351
Pennsylvania.....	78	621	Colorado.....	62	330, 331
South Carolina.....	78	629	Minnesota (D).....	70	709, 710
Vermont.....	65	360	Nevada.....	63	588, 589
Accidents to employees:			Boycotting:		
Illinois.....	74	262	Colorado.....	62	330, 331
United States.....	77	415, 416	(<i>See also Interference with employment.</i>)		
Advances made by employers. (<i>See Employers' advances.</i>)			Bribery, etc., of employees:		
Age of employment of children. (<i>See Children, employment of.</i>)			Connecticut.....	62	332
Age of employment of telegraph operators on railroads:			Indiana.....	74	269
Nebraska.....	76	1031	Iowa.....	74	277, 278
Alien contract labor:			Massachusetts.....	57	710
Delaware.....	76	1021	Michigan.....	62	581
United States.....	71	397-399	Nebraska.....	76	1031, 1032
United States (D).....	68	183-185	New York.....	64	905, 906
United States (Op.).....	68	173-176	Rhode Island.....	64	908, 909
Antitrust act:			South Carolina.....	65	360
Texas (D).....	75	633, 634	Virginia.....	70	781, 782
United States (D).....	70	710, 711	Washington.....	67	912
Arbitration of labor disputes:			Wisconsin.....	67	914, 915
Colorado.....	73	1046	Bribery of representatives of labor organizations:		
Maryland.....	57	707, 708	New York.....	57	718
Massachusetts.....	57	708-710	Bureau of labor:		
Nevada.....	76	1033-1035	California.....	62	328
New York.....	77	406, 407	Iowa.....	60	712
Oklahoma.....	77	412	Michigan.....	68	235
United States (D).....	74	206-212	Missouri.....	75	655, 656
Assignment of claims to avoid exemption laws. (<i>See Exemption of wages, assignments to avoid.</i>)			New Jersey.....	76	1027, 1028
Assignment of wages:			Oklahoma.....	58	1018, 1019
Colorado.....	73	1049-1051	Virginia.....	77	412
			United States.....	70	781
			Bureau of mines:	57	719
			West Virginia.....	67	912, 913
			Cause of discharge. (<i>See Discharge, statement of cause of.</i>)		

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Child labor, national committee on, incorporation of:			Children, employment of, general provisions—Concluded.		
United States	71	390, 400	Illinois	73	664, 685
Children and women, employment of, general provisions:			Iowa	68	235, 236
Louisiana	70	764	Kentucky	70	760, 761
Missouri (D)	68	186, 187	Maine	72	644, 645
Children and women, employment of, in barrooms:			Maryland	70	765-767
Arizona	72	638	Massachusetts	62	224-226
New Hampshire	63	589	Missouri	70	768, 772, 773
Vermont	60	715	Montana	62	236, 237
Children and women, employment of, in mines:			New Jersey	62	243, 244
Illinois	61	1077	New York	62	245-248
Indiana	63	576	Ohio	62	250, 251
Missouri	61	1093	Oregon	62	255, 257, 258
New York	66	468	Pennsylvania	62	258-260
Children and women, employment of, investigation of:			Rhode Island	62	266-268
United States	71	397	Vermont	62	269-271
Children and women, hours of labor of:			Washington	71	276, 277
Connecticut	73	671	West Virginia	62	279
Louisiana	70	764	Wisconsin	62	280
Massachusetts	57	711	Children, employment of, in barrooms:		
New York	69	469, 470	Connecticut	62	205
Children, earnings of. (See Earnings of minors.)			Georgia	62	209
Children, employment of, age limit for:			Hawaii	62	210
Alabama	73	657	Idaho	74	261
Arkansas	73	660	Maryland	72	643, 644
California	62	200	New Hampshire	62	223
California (D)	72	641, 642	South Dakota	62	241
Delaware	68	199-202	Vermont	62	274
District of Columbia	77	207, 208	Children, employment of, in certain occupations, forbidden:		
Florida	73	396-398	California	62	190, 200
Georgia	68	678	California (D)	68	202, 203
Georgia (D)	77	371, 372	Idaho	72	643, 644
Idaho	72	643, 644	Iowa	68	236
Illinois (D)	59	335-337	Maine	62	222
Iowa	68	235, 236	Oklahoma	77	412
Kansas	62	217, 218	Children, employment of, in mines:		
Kentucky	70	760	Illinois	62	211
Louisiana	70	764	Indiana	62	216
Maine	72	644, 645	Missouri	62	236
Maryland	70	765-767	Montana	62	237-239
Massachusetts	62	226	Oklahoma	77	412
Michigan	70	772	Oregon	62	255
Michigan (D)	62	231	Pennsylvania	62	263-266
Missouri	64	881, 882	Pennsylvania (D)	64	887-889
Montana	72	607	West Virginia	62	280
New Jersey	62	237	Children, employment of, in street trades:		
New Jersey (D)	77	381, 382	District of Columbia	77	398
North Carolina (D)	67	863, 864	Massachusetts	70	768, 771
Oklahoma	77	373-376	New York	62	251
Oregon	78	584-586	Children, hiring out, to support parents in idleness:		
Pennsylvania	77	412, 413	Alabama	73	657
Pennsylvania (D)	62	258-260	Georgia	62	209
Rhode Island	62	263, 266-268	Louisiana	62	220
Vermont	74	239, 240	Mississippi	62	235
Washington (D)	78	577, 578	North Carolina	62	253
West Virginia	62	269-271	Children, hours of labor of:		
Children, employment of, general provisions:			Alabama	73	657
Alabama	73	657-659	Arkansas	73	660
Arizona	72	638, 639	California	62	200
Arkansas	73	660, 661	Delaware	72	641, 642
California	62	200-202	District of Columbia	62	207
Connecticut	72	641, 642	Florida	77	398
Delaware	62	206	Idaho	73	678
District of Columbia	62	207, 208	Illinois	72	643
Florida	68	230, 231	Iowa	62	216
Georgia	77	396-398	Kentucky	68	235
Idaho	73	678, 679	Massachusetts	70	760
Illinois	68	234, 235	New Hampshire	62	235, 236
Idaho	72	643, 644	New Jersey	62	241
			Oregon	62	244
			Oregon (D)	62	259
			Pennsylvania	68	263, 264
				62	266, 267

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Children, night work by:			Eight-hour day—Concluded.		
Alabama.....	73	657	Nevada.....	63	586
Arkansas.....	73	660	Nevada (D).....	59	334, 335
California.....	72	641, 642	New York.....	69	470
District of Columbia.....	72	366	New York (D).....	57	687, 688
Florida.....	73	678	Oklahoma.....	77	412
Georgia.....	68	234	Oregon.....	78	622, 623
Idaho.....	72	643	Porto Rico.....	59	385
Iowa.....	68	235	Washington (D).....	57	685-687
Kentucky.....	70	760	Wyoming (D).....	69	455-457
Massachusetts.....	62	226	United States.....	68	238
Michigan.....	62	231	United States (D).....	70	714-717
New Jersey.....	64	905		71	359-367
New York.....	69	499		68	175-180
Oregon.....	62	259	United States (Op.).....	74	198-200
Pennsylvania.....	62	267	Emigrant agents:		
Rhode Island.....	62	269	Georgia.....	59	378
Vermont.....	62	276, 277	Hawaii.....	62	334
	71	395	North Carolina (D).....	57	688
Children. (See also Children and women.)			South Carolina.....	78	631
Chinese, exclusion, etc., of:			Employee, bribery, etc., of. (See Bribery, etc., of employees.)		
United States.....	57	719, 720	Employers' advances, repayment of:		
Citizens preferred for employment on public works:			Arkansas.....	73	1044, 1045
Massachusetts.....	57	708	Florida.....	73	1054
New Mexico.....	61	1094	Louisiana (D).....	67	861
Civil service:			New Mexico.....	61	1093, 1094
Colorado.....	73	1046	South Carolina.....	60	714
Pennsylvania.....	70	780	South Carolina (D).....	73	1022-1029
Wisconsin.....	78	629	Employers' liability. (See Liability, etc.)		
	67	918	Employers to furnish names of employees to officials:		
Coal, weighing. (See Weighing coal.)			New Mexico.....	61	1094
Coercion of employees in trading, etc.:			Wyoming.....	72	653
Oregon.....	78	624	Employment, foremen, etc., accepting fees for furnishing:	61	1094, 1095
Combinations to fix wages:			Montana.....	72	648
Louisiana.....	57	704	Employment of labor, general provisions:		
Commissioner of labor. (See Bureau of labor.)			North Dakota.....	77	411
Company stores:			Employment offices:		
New York.....	69	461, 462	California.....	62	329
Compensation for injuries of Federal employees:			California (D).....	57	693-696
United States.....	77	415, 416	Colorado.....	73	1048, 1049
Conspiracy, labor agreements not:			Connecticut.....	62	333
California (D).....	68	181-183	District of Columbia.....	68	231-234
Nevada (D).....	78	597-601	Hawaii.....	71	394
(See also Interference; Intimidation.)			Iowa.....	74	261
Contract labor, alien. (See Alien contract labor.)			Maine.....	72	276, 277
Contractors' bonds. (See Protection of wages.)			Massachusetts.....	72	645, 646
Contracts of employment, regulation, etc., of:				70	771
Louisiana (D).....	67	861	Michigan.....	63	577
Contracts of employment with intent to defraud:				75	654, 655
Alabama.....	73	1043		63	584, 586
Georgia (D).....	74	212-216	Minnesota.....	76	1021, 1022
South Carolina.....	60	714		76	1024
Cooperative associations:			Missouri.....	61	1090
Minnesota.....	76	1023, 1024		76	1025
Death. (See Injuries causing.)			New Jersey.....	77	399-402
Discharge, statement of cause of:				57	713-715
Missouri.....	61	1092	New York.....	69	460
Divorce, etc., statistics of to be procured:				64	462-467
California.....	62	328	New York (D).....	59	890, 891
Earnings of married women:			Ohio.....	59	379, 380
New Mexico.....	72	653	Pennsylvania.....	78	382, 383
Earnings of minors:			Virginia.....	60	625-628
Wisconsin.....	62	281	(See also Emigrant agents; Lodging houses, sailors'.)	60	716
Eight-hour day:			Engineers, examination, etc., of. (See Examination, etc.)	70	728, 729
California.....	62	329, 330	Enticing employees:		
Colorado.....	62	331	Arkansas.....	65	354
Colorado (D).....	69	453-455	Louisiana.....	70	764, 765
Massachusetts.....	70	773	West Virginia (D).....	65	339-342
Missouri.....	61	1092, 1093	Examination, etc., of barbers:		
Montana.....	63	585, 586	Connecticut.....	62	332, 333
Montana (D).....	70	711-713	Kansas.....	61	1080
			Maryland.....	57	705-707
			Maryland (D).....	59	338-340

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Examination, etc., of barbers— Concluded.			Hours of labor of children and women. (<i>See</i> Children, etc.)		
New York.....	69	461	Hours of labor of drug clerks:	62	328
Oregon.....	78	621, 622	California.....		
Oregon (D).....	57	696-698	Hours of labor of employees in bakeries:		
Washington (D).....	58	992-994	New Jersey.....	64	904, 906
	76	992-994	New York (D).....	57	696-700
Examination, etc., of horsehoers:				59	340-356
Hawaii.....	62	334	Hours of labor of employees in general employments:		
Washington (D).....	58	994, 995	Arkansas.....	65	350
New York.....	77	402	Hours of labor of employees in mines, smelters, etc.:		
Examination, etc., of miners, mine foremen, etc.:			Colorado.....	62	331
Illinois (D).....	71	382-385	Idaho.....	72	642
Pennsylvania (D).....	68	205, 206	Missouri.....	61	1092, 1093
Examination, etc., of plumbers:			Montana.....	63	585, 586
Illinois (D).....	70	730-732	Nevada (D).....	72	650
Maine.....	61	1085	Oklahoma.....	59	334, 335
Minnesota (D).....	62	322, 323	Oregon.....	77	412
Texas (D).....	68	204, 205	Wyoming (D).....	78	622
Washington.....	67	907-909		69	455-457
Washington (D).....	67	875-877	Hours of labor of employees on public works:		
Examination, etc., of stationary firemen:			Oregon.....	78	623
Massachusetts.....	61	1087, 1088	Hours of labor of employees on railroads:		
	70	770	Arizona (D).....	60	694, 695
	75	652, 653	Arkansas.....	73	1045
Examination, etc., of steam engi- neers:			Connecticut.....	73	1064
Massachusetts.....	61	1087, 1088	Indiana.....	63	577
	70	770	Iowa.....	74	270
	75	652, 653	Kansas.....	74	275
Nevada.....	63	587, 588	Minnesota.....	61	1082, 1083
New Hampshire.....	76	1036	Missouri.....	74	280
New Jersey.....	63	590, 591	Montana.....	76	1022
Ohio.....	70	776	Montana (D).....	76	1029
Ohio.....	59	378, 379	Nevada.....	76	406, 409
Pennsylvania.....	65	356, 357	New York.....	77	409, 410
Philippine Islands.....	78	630	North Carolina.....	77	411, 412
United States.....	71	397	North Dakota.....	77	621
Exemption of wages, assignments to avoid:			Oregon.....	78	631
Maryland.....	70	767	South Dakota.....	78	631
Exemption of wages from execu- tion, etc.:			United States.....	71	401, 402
Alabama (D).....	63	552, 553	Hours of labor of employees on street railways:		
Arizona.....	72	638, 640	Massachusetts.....	70	772
Iowa.....	60	712	Hours of labor of women. (<i>See</i> Women, etc.)		
Kansas.....	61	1063	Hours of labor on public roads:		
Louisiana.....	57	704	Indiana.....	63	577
Nebraska.....	76	1031	Philippine Islands.....	71	396
Porto Rico.....	59	385	Hours of labor on public works:		
Tennessee.....	66	382	California.....	62	329, 330
Factories, etc., inspection of. (<i>See</i> Inspection.)			Colorado (D).....	69	453-455
Fees for furnishing employment. (<i>See</i> Employment, foremen, etc., accepting fees for furnish- ing.)			Hawaii.....	74	261
Fellow-servants. (<i>See</i> Liability of employers.)			Massachusetts.....	70	773
Fire escapes on factories:				75	651
District of Columbia.....	68	229, 230	Montana.....	63	585, 586
Iowa.....	60	712, 713	Nevada.....	72	650
New Jersey.....	58	1016-1018	New York.....	63	596
Pennsylvania.....	65	359	Oklahoma.....	64	905
West Virginia.....	67	914	Porto Rico.....	69	470
Firemen, stationary, examina- tion, etc., of. (<i>See</i> Examina- tion, etc.)			United States.....	77	412
Foundation for the Promotion of Industrial Peace:			United States (D).....	59	385
United States.....	71	400, 401	United States.....	68	236
Free public employment offices. (<i>See</i> Employment offices.)			United States (D).....	70	714-717
Garnishment of wages of public employees:			Immigration, regulation, etc., of:		
Utah.....	65	364	Delaware.....	76	1021
Guards on threshing machines, etc.:			United States.....	57	720
Wisconsin.....	67	916, 917		71	397-399
Horsehoers, examination, etc., of. (<i>See</i> Examination, etc.)			Immigration. (<i>See also</i> Alien contract labor.)		
			Inclosed platforms. (<i>See</i> Protec- tion of employees on street rail- ways.)		
			Industrial Peace, Foundation for the Promotion of:		
			United States.....	71	400, 401

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Injured employees, public:			Inspectors, railroad:		
Philippine Islands.....	71	394	Illinois.....	61	1078
United States.....	77	415, 416	Insurance, accident:		
Injuries causing death, right of			Illinois.....	61	1075, 1076
action for:			Insurance, cooperative:		
Alabama (D).....	58	996-998	Maryland (D).....	57	689, 690
Missouri.....	61	1090, 1091	Intemperate employees on public		
Nevada.....	63	588	carriers:		
Oklahoma.....	77	413	Vermont.....	71	306
South Carolina (D).....	60	450, 451	Intemperate employees. (See also		
Virginia (D).....	60	442-444	Intoxication.)		
Wisconsin (D).....	64	891	Interference with employment:		
Injuries, personal, right of action			Connecticut (D).....	70	732-734
for:			Illinois (D).....	63	553-558
Hawaii.....	74	261	Louisiana.....	70	765
Missouri.....	76	1027	Wisconsin (D).....	57	678-680
Nevada.....	63	588		70	734-743
New Mexico.....	77	416	Intimidation:		
South Carolina.....	65	360	Connecticut (D).....	57	681-684
Inspection of bakeries:				70	884-886
New Jersey.....	64	904, 905		67	732-734
New York.....	69	468, 469		78	596, 597
Pennsylvania.....	65	358, 359		65	364
Tennessee.....	65	362			
Inspection of factories:					
Alabama.....	73	817, 818	Utah.....	74	275
Connecticut.....	62	332	North Carolina.....	77	409
Illinois.....	73	834-836	Vermont.....	71	396
Indiana (D).....	65	342-344	Wyoming.....	61	1095
Kansas (D).....	73	1013-1015	Labeling goods unlawfully manu-		
Kentucky.....	70	760, 761	factured:		
Louisiana.....	70	764	New York.....	69	461
Maryland (D).....	58	999-1002	Labor agents. (See Employment		
Massachusetts.....	57	711	offices.)		
	70	768	Labor, bureau of. (See Bureau of		
New Jersey.....	58	1013-1019	labor.)		
	57	712, 713	Labor Day:		
	69	715-718	Mississippi.....	57	712
	65	458-461	Labor law, violations of:		
	60	467-469	New York.....	77	407, 408
	65	357-360	Labor organizations, bribery of		
	60	713, 714	representatives of:		
	67	909-911	New York.....	57	718
	58	990-992	Labor organizations, incorpora-		
	62	321, 322	tion, regulation, etc., of:		
	71	381, 382	Connecticut.....	73	1051
	67	915, 917	Massachusetts.....	57	710
			Montana.....	72	647
			New Hampshire.....	63	589
			Pennsylvania (D).....	61	1064, 1065
Inspection of steam boilers:			Labor organizations. (See also		
Massachusetts.....	61	1089	Trade-marks of trade unions.)		
	70	769, 773, 774	Leave of absence for employees on		
Montana.....	72	648	public works:		
New York.....	64	907	District of Columbia.....	77	396
	77	402-404	Liability of employers for injuries		
Inspection of steam vessels:			to employees:		
New Hampshire.....	63	590, 591	Arizona (D).....	80	694, 695
New Jersey.....	70	774-776	Arkansas.....	73	1043, 1044
United States.....	68	718-720	California.....	72	640, 641
		237	Colorado (D).....	68	187, 188
Inspectors, factory:				73	1015-1019
Connecticut.....	73	825	District of Columbia (D).....	78	582-584
Illinois.....	73	835, 836	Florida (D).....	77	372-377
Iowa.....	60	712	Illinois.....	61	1075, 1076
Louisiana.....	70	763, 764	Illinois (D).....	69	444-446
Massachusetts.....	75	653		71	382-385
New Jersey.....	58	1018, 1019		58	988, 989
Ohio.....	59	383, 384		71	377-380
Rhode Island.....	64	908		74	63
Inspectors, mine:				61	1061-1064
Arkansas.....	65	352, 353		63	547-549
Colorado.....	73	1046-1048		61	1082
Illinois.....	61	1076		74	63, 64
Indiana.....	63	574-576		69	452, 453
Kansas.....	74	272, 273		73	1013-1015
Kentucky.....	70	761-763		64	893-897
Michigan.....	63	578		70	769
Minnesota.....	63	582-584		76	986, 987
Montana.....	72	650-652		64	892, 893
North Dakota.....	77	410, 411		69	446-449
Oklahoma.....	77	412		61	1090, 1091
West Virginia.....	67	912, 913		63	585

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Liability of employers for injuries to employees—Concluded.			Mine regulations—Concluded.		
New York.....	69	471	Kansas.....	61	1080-1082
	61	1055, 1056	Kentucky.....	74	278-280
New York (D).....	71	371-373	Kentucky (D).....	70	761-768
	78	987-989	Michigan.....	64	883-887
North Carolina (D).....	63	549, 550	Missouri.....	63	578-580
Ohio.....	70	717		61	1008
	59	384	Montana.....	76	1029, 1030
	56	297-299	Nevada.....	72	650-652
Ohio (D).....	57	690-693	New York.....	63	587
	65	337	North Dakota.....	69	468, 470
	67	868-875	Ohio.....	77	404, 405
Oklahoma.....	77	413		77	410, 411
Philippine Islands.....	71	394	Ohio (D).....	70	779
	60	450, 451	Oklahoma.....	65	337
South Carolina (D).....	77	338-388	Pennsylvania.....	77	412
Tennessee (D).....	65	334-337	Pennsylvania (D).....	78	620
Texas.....	73	1020, 1021		62	318, 319
	65	363	Tennessee (D).....	65	354-357
	60	692-694		73	1020, 1021
Texas (D).....	61	1056-1058	Utah.....	65	354
	63	551	West Virginia.....	67	912, 913
	65	338, 339	West Virginia (D).....	72	608-610
	71	367-371	Wyoming.....	61	1095
Virginia (D).....	58	985, 986	Wyoming (D).....	71	389-391
	69	442-444	(See also Accidents in mines; Inspectors, mine.)		
Washington (D).....	58	990-992	Mines, etc., hours of labor of employees in. (See Hours of labor.)		
West Virginia (D).....	71	381, 382	Mines, etc., intoxication in or about:		
Wisconsin (D).....	72	608-610	Wyoming.....	61	1095
United States.....	58	996-998	Newsboy law. (See Children, employment of, in street trades.)		
	64	909	Payment of wages due deceased employees:		
	77	413, 414	Pennsylvania.....	78	628
	68	188-197	Payment of wages due discharged employees:		
	70	717-728	Arkansas (D).....	60	699, 700
	71	385-389	Payment of wages in scrip:		
United States (D).....	72	610, 611	Arkansas.....	65	350, 351
	74	216-239		73	1045
	77	378-381	Arkansas (D).....	77	384-386
	78	582-584	Indiana.....	63	576
Liability of railroad companies to workmen not employees:			Missouri (D).....	56	309-311
Pennsylvania.....	78	629, 630	Nevada.....	63	587
Pennsylvania (D).....	70	743-746	New Mexico.....	72	653
License tax, exemption of mechanics, etc., from:			New York.....	69	461, 462
Louisiana.....	57	703	Oregon.....	78	628
Liquor, sale of, to employees:			South Carolina.....	60	714, 715
Hawaii.....	62	334, 335	Texas.....	65	363
New Hampshire.....	74	262	Washington.....	67	911, 912
Vermont.....	63	589, 590	Payment of wages, modes and times of:		
Locomotive boilers, inspection of:			Indiana (D).....	67	886-888
New York.....	64	907		74	242, 243
	77	402-404	Maryland.....	57	704, 705
Lodging houses, sailors':			Massachusetts.....	61	1086, 1087
United States.....	57	719		70	770
Manufactured articles, marking:			New Jersey.....	58	1019
California.....	62	330	Pennsylvania.....	78	620
Marriage, etc., statistics of, to be procured:			Vermont.....	71	396
California.....	62	328	Peonage:		
Married women, earnings of:			United States (D).....	60	695, 696
New Mexico.....	72	653	Picketing:		
Mechanics, exemption of, from manufacturers' taxes:			Colorado.....	62	330
Philippine Islands.....	59	385	Plumbers, examination, etc., of. (See Examination, etc.)		
Mine explosions, investigation of:			Preference of wages. (See Wages as preferred claims.)		
United States.....	77	414	Printing, public. (See Public printing.)		
Mine regulations:			Protection of employees as members of labor organizations:		
Arizona.....	72	639, 640	Kansas (D).....	56	311
Arkansas.....	65	352-354		78	591, 592
	61	1076-1078	Nevada (D).....	67	888, 889
Illinois.....	74	265, 266	New York (D).....	68	216-221
	67	866-868	United States (D).....	72	613-629
	68	214-216		75	634-648
Illinois (D).....	69	444-446			
	71	382-385			
	63	569-577			
Indiana.....	74	269-273			
Indiana (D).....	67	864-866			
Iowa.....	74	277			

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Protection of employees as voters:			Railroads, safety appliances on:		
New Jersey.....	70	776, 777	Arkansas.....	73	1046
Philippine Islands.....	78	630	Colorado (D).....	73	1015-1019
Protection of employees on buildings:			Illinois.....	61	1078-1080
Connecticut.....	73	1062, 1063	Indiana.....	74	267-269
Illinois.....	74	262-265	Kansas (D).....	77	273, 274
Kansas.....	61	1063, 1064	Michigan.....	75	377, 378
New York (D).....	62	319, 320	Minnesota.....	76	654
Pennsylvania.....	78	624, 625	Missouri.....	76	1022, 1023
Wisconsin.....	67	915, 916	New York.....	77	1025, 1026
Protection of employees on street railways:			Ohio.....	59	384
District of Columbia.....	60	718	Texas.....	70	777-779
Louisiana.....	57	703, 704	Vermont.....	65	363
Maine.....	61	1064, 1065	Wisconsin.....	60	715
Massachusetts.....	70	772	United States.....	67	917, 918
Montana.....	72	648, 649		77	414, 415
New York.....	64	906, 907		56	299-309
Ohio.....	70	777		59	359-361
South Carolina.....	60	714	United States (D).....	71	385-389
Protection of wages:				77	378-381
Massachusetts.....	57	711		78	578-581
United States.....	60	717, 718	Railroads, shelters for workmen on:		
Public printing office, employees in:			Arkansas.....	65	354
Kansas.....	61	1063	Kansas.....	74	280
Public printing to be done within the State:			Railroads, structures near tracks of:		
Arkansas.....	65	354	Ohio.....	59	380, 381
Public works, labor on:			Rates of wages of employees of public printing office:		
New York.....	64	906	Kansas.....	61	1063
Public works, preference of domestic materials for:			Rates of wages of employees on public works:		
Missouri (D).....	60	697-699	Hawaii.....	74	261
New Mexico.....	61	1094	Nebraska.....	76	1031
Public works, preference of resident laborers on:			Nevada.....	76	1036
Massachusetts.....	57	708	New York.....	64	905
New Mexico.....	61	1094	Relief societies:		
Public works, retention of wages of employees on:			South Carolina (D).....	77	386-388
California.....	62	330	Right of action for injuries. (See Injuries.)		
Public works, vaccination of employees on:			Safety appliances. (See Fire escapes on factories; Guards on threshing machines, etc.; Inspection of factories; Railroads, safety appliances on.)		
Virginia.....	60	717	Saloons, employment of children and women in. (See Children and women, etc.)		
Railroad bridges, etc.:			Scrip. (See Payment of wages.)		
Vermont.....	60	715	Seamen:		
Railroad companies, liability of, for injuries to employees. (See Liability of employers.)			Philippine Islands.....	71	394, 395
Railroad employees, rules for:			United States.....	57	719
Indiana.....	74	274, 275		68	237, 238
Railroad trains, sufficient crew required on:				71	400
Arkansas.....	73	1044	Seats for female employees:		
Indiana.....	74	266, 267	Kentucky.....	70	761
Railroads, accidents on. (See Accidents.)			Louisiana.....	70	764
Railroads, construction of cabooses on:			Maryland.....	57	707
Montana.....	72	648	Pennsylvania.....	65	357
Railroads, height of bridges, wires, etc., over:			Tennessee.....	65	362
Arkansas.....	65	351	Statistics, collection of:		
Idaho.....	72	644	Hawaii.....	57	703
Iowa.....	74	276	Steam boilers, inspection of. (See Inspection.)		
Kansas.....	61	1063	Steam engineers, examination, etc., of. (See Examination, etc.)		
Oregon.....	78	623, 624	Stone worked within State, use of, on public works. (See Public works, preference of domestic materials for.)		
Vermont.....	60	715	Street railways, hours of labor of employees on. (See Hours of labor, etc.)		
Wyoming.....	61	1095	Street railways, protection of employees on. (See Protection of employees.)		
Railroads, hours of labor of employees on. (See Hours of labor.)			Street railways, safety appliances on:		
Railroads, illiterate employees on:			New Hampshire.....	76	1036
Ohio.....	59	379			
Railroads, intemperate employees on. (See Intemperate employees on public carriers.)					

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Suits for wages:			Trade-marks of trade unions:		
California.....	72	640	Arkansas.....	65	354, 355
Georgia.....	68	235	California.....	62	330
New York.....	164	906	Connecticut.....	73	1051, 1052
Oregon.....	77	405, 406	Connecticut (D).....	67	880-891
Sunday labor:	78	623	Nebraska.....	63	586
Connecticut.....	73	1053	Nevada.....	76	1032, 1033
Georgia (D).....	169	457	New Jersey.....	70	774
Hawaii.....	74	243, 244	New Jersey (D).....	61	1066, 1067
Idaho.....	62	333, 334	New York.....	57	715
Indiana.....	72	642	Tennessee.....	65	361, 362
Maine (D).....	74	267	Vaccination of employees on public works:		
Massachusetts.....	68	221	Virginia.....	60	717
Rhode Island (D).....	157	711	Wages as preferred claims:		
Virginia.....	175	664	Iowa.....	68	236
Sweating system:	67	861, 862	New Mexico.....	61	1094
Maryland (D).....	60	716, 717	United States.....	68	237
Massachusetts.....	58	999-1002	Wages, assignment of. (<i>See Assignment.</i>)		
New Jersey.....	61	1086	Wages, combinations to fix:		
New York.....	58	1015, 1016	Louisiana.....	57	704
Pennsylvania.....	157	715-718	Wages, exemption of. (<i>See Exemption, etc.</i>)		
Telegraph and telephone companies, investigation of:	65	458-461	Wages of employees on public works, retention of:		
United States.....	77	416	California.....	62	330
Telegraph operators, etc., railroad, age of employment of:			Wages, payment of. (<i>See Payment, etc.</i>)		
Nebraska.....	76	1031	Wages, rates of. (<i>See Rates of wages.</i>)		
Telegraph operators, etc., railroad, hours of labor of. (<i>See Hours of labor of employees on railroads.</i>)			Wages, refusing to pay:		
Telegraph poles, size, height, etc., of:			Montana.....	72	652
Wyoming.....	61	1095	Wages, suits for. (<i>See Suits for wages.</i>)		
Tenant factories. (<i>See Inspection of factories.</i>)			Weighting coal at mines:		
Time for meals to be allowed employees:			Arkansas.....	65	351
Louisiana.....	57	704	Woman and child labor, investigation of:		
Pennsylvania.....	65	357	United States.....	71	397
Time to vote to be allowed employees:			Women and children. (<i>See Children and women.</i>)		
Arkansas.....	73	1044	Women, employment of:		
Massachusetts.....	57	710	Michigan.....	63	581
Nebraska.....	76	1080, 1081	Women, hours of labor of:		
Ohio.....	59	380	Colorado (D).....	76	960-962
			Oregon (D).....	167	877-879
				175	631-633
			Women, night work by:		
			New York.....	69	469
			New York (D).....	72	611-613

INDEX TO BULLETIN NO. 78.

	Page.
Accident frequency in the United States.....	417, 418, 422
Accident liability of coal-mine employees in the United States, compared with Great Britain.....	456
Accident liability of electricians and linemen.....	434, 435
Accident liability of railway employees:	
Brakemen.....	447, 463
Conductors.....	447, 448
Engineers.....	447, 448
Firemen.....	447, 449
Flagmen and switchmen.....	448, 464
Freight handlers.....	448, 464
Gatemmen.....	448, 464
Mail clerks.....	446, 447
Trainmen.....	445
Accident liability of railway employees in the United States, compared with Germany.....	458
Accident liability. (See also Accidents.)	
Accident mortality, estimated, of adult males in gainful occupations in the United States....	418
Accident notification, problem of.....	419
Accident prevention, problem of.....	457, 458
Accident problem, railway, discussion of.....	449
Accident problem, social aspects of.....	458
Accidental injury, degree of.....	419-422
Accidents, causes of.....	423, 456, 457
Accidents in—	
Electrical industries.....	433-436
Factories and workshops.....	424-433, 459, 460
chemical industry.....	426-428
explosives, manufacture of.....	428, 429
iron and steel manufacture.....	425, 426
lumber industry.....	429, 430
metal trades.....	424, 425, 459, 460
sawmills.....	430, 431
textile industries.....	431-433
Life-Saving Service.....	455, 456
Mines and quarries.....	436-444, 461-463
coal mines.....	437, 438, 461
copper mines.....	440, 441
gold and silver mines.....	441
iron mines.....	438, 439, 462
lead and zinc mines.....	439, 440
mineral oil industry.....	442, 443
quarries.....	443, 444, 463
smelting and refining.....	442, 459
Railway transportation.....	444-449, 464
Water transportation.....	449-455, 465
docks and wharves.....	454
fisheries.....	454, 455
navigation.....	449-458, 465
Boatmen, accident liability of.....	465
Brakemen, railway, accident liability of.....	447, 463
Bridge tenders, accident liability of.....	465
British Old-Age Pensions Act of 1908.....	549-552
Building trades, hours of labor in, in Germany compared with England.....	545
Building trades, rates of wages in:	
German Empire.....	540, 541
German Empire and Great Britain compared.....	543, 544
Bulgaria, census of manufactures in, digest of.....	569-564
Causes of accidents in the United States and in New York State, discussion of.....	423, 456, 457
Census of manufactures in Bulgaria, digest of.....	569-564
Chemical industry, accidents in.....	426-428
Coal mine employees, accident liability of, in the United States, compared with Great Britain.....	458
Coal mining, accidents in.....	437, 438, 461
Conciliation (Trade Disputes) Act, 1906, proceedings under, in Great Britain.....	565, 566
Conductors, railway, accident liability of.....	447, 448
Copper mining, accidents in.....	440, 441
Cost of living of the working classes in the principal towns of the German Empire.....	523-548
Deaths from accidents, estimated number of, among adult males in gainful occupations in the United States.....	418
Deaths from accidents. (See also Accidents.)	

	Page.
Decision of courts affecting labor:	
Children, employment of—	
age limit—constitutionality of statute—employment as cause of injury.....	584-586
violation of statute—negligence—remedies.....	577, 578
Employers' liability—	
railroad companies—Federal statute—constitutionality for Territories and District of Columbia.....	582-584
railroad companies—safety appliances—maintenance—delegation of legislative authority.....	578-581
Interference with employment—intimidation.....	586, 597
Labor organizations—	
attachment for damages—unincorporated associations.....	597-601
benefits—construction of by-laws.....	608, 604
benefits—damages for forfeiture of insurance policy.....	606-617
boycott—conspiracy—injunction—freedom of speech—remedies.....	604-608
boycott—damages—attachment—unincorporated associations.....	597-601
expulsion of members—loss of benefits—acts of third parties—measure of damages.....	608-617
injunction—strikes—picketing—conspiracy—evidence.....	586-586
liability of unincorporated associations—attachment for damages.....	597-601
picketing—use of streets—personal liberty—municipal regulation.....	601-608
protection of employees as members—constitutionality of statute—agreements between employers.....	586-586
Railway relief association—status—liability of company.....	617-620
Digest of recent foreign statistical publications:	
Bulgaria—	
Recensement des Industries Encouragées par l'État (31 décembre, 1904).....	550-564
Great Britain—	
Report of the Departmental Committee Appointed to Consider whether the Post-Office should Provide Facilities for Insurance under the Workmen's Compensation Acts.....	566-568
Sixth Report of Proceedings under the Conciliation (Trade Disputes) Act, 1896.....	565, 566
India—	
Report of the Textile Factories Labor Committee Appointed by the Government of India, December, 1906, to Inquire into the Condition of Factory Labor in India.....	568-571
Italy—	
Statistica degli scioperi avvenuti in Italia nell' Anno 1904.....	571-574
Russia—	
Svod Otechotov Fabrichnykh Inspectorov za 1904 god (Digest of reports of factory inspectors for 1904).....	574-576
Digest of recent reports of State bureaus of labor statistics:	
Missouri.....	553-556
Rhode Island.....	556-558
Docks and wharves, accidents at.....	454
Electrical industries, accidents in.....	433-436
Electrical risk in mining.....	442
Electricians and linemen, accident liability of.....	434, 435
Emigration, Mexican, to the United States, effect of, upon labor efficiency of Mexicans.....	504-506
Emigration, Mexican, to the United States, effects of, in Mexico.....	513-519
Employment offices, free, in Missouri, operations of.....	565
Engineering trades, hours of labor in, in Germany, compared with England.....	545
Engineering trades, per cent of increase in weekly wages in, for five German towns, between October, 1905, and March, 1908.....	547
Engineering trades, rates of wages in:	
German Empire.....	540, 541
German Empire and Great Britain, compared.....	543, 544
Engineers, railway, accident liability of.....	447, 448
Explosives, manufacture of, accidents in.....	428, 429
Factories and workshops, accidents in.....	424-428, 459, 460
Factory inspectors' reports for Russia, digest of.....	574-576
Factory labor in India, report on condition of.....	568-571
Farm laborers, Mexican, in the United States.....	482-485
Fatal accident frequency in the United States.....	418, 422
Fatal accidents among occupied adult males in the United States, estimated number of.....	418
Fatal accidents. (See also Accidents.)	
Firemen, railway, accident liability of.....	447, 449
Fisheries, accidents in the.....	454, 455
Flagmen and switchmen, railway, accident liability of.....	446, 448, 464
Food, cost of, for average British and German workman's families, compared.....	538, 539
Food, quantity of, consumed by workingmen's families in Germany.....	538
Free employment offices in Missouri, operation of.....	555
Freight handlers, railway, accident liability of.....	448, 464
Gatemen, railway, accident liability of.....	448, 464
Germany, cost of living of working classes in.....	523-548
Gold and silver mining, accidents in.....	441
Great Britain:	
Electrical accidents in.....	436
Navigation accidents in.....	450-452
Proceedings under Conciliation (Trade Disputes) Act, 1896, in.....	565, 566
Report on question of providing insurance by post-office in, under Workmen's Compensation Acts.....	566-568
Textile accidents in.....	432, 433
Home life and standard of living of Mexican laborers.....	501-504
Hours of labor in the building, engineering, and printing trades in Germany, compared with England.....	545, 546
Immigration, Mexican:	
Distributing centers of.....	474, 475
Effects of, in the United States.....	519-522
Source of.....	468, 469
Income, average weekly, of workingmen's families in Germany.....	534

	Page.
India, conditions of factory labor in	568-571
Industrial accidents	417-485
Industrial statistics of Rhode Island	556, 557
Industries, manufacturing, statistics of:	
Missouri	558, 554
Rhode Island	556, 557
Injury, accidental, degree of	419-422
Insurance, question of providing facilities for, by post-office in Great Britain under Workmen's Compensation Acts	556-558
Iron and steel manufacture, accidents in	425, 428
Iron mining, accidents in	488, 489, 492
Italy, strikes and lockouts in, report on	571-574
Labor efficiency of Mexicans, effect of emigration upon	504-508
Labor, factory, in India, conditions of	568-571
Labor, Mexican, in the United States	466-522
Labor organization in Mexico, effects of emigration to the United States on	516, 517
Labor organizations in Missouri, statistics of	554, 555
Labor statistics, reports of State bureaus of:	
Missouri	558-556
Rhode Island	556-558
Laborers, Mexican, character of, and comparison with other nationalities	496-501
Land, Government, acres of, in Missouri	558
Land in Missouri, assessed valuation of	553
Laws relating to labor. (See Cumulative index of labor laws and decisions relating thereto, pp. 633 to 640.)	
Lead and zinc mining, accidents in	439, 440
Life-Saving Service, accidents in the	455, 456
Linemen and electricians, accident liability of	434, 435
Living conditions and home life of Mexican laborers	501-504
Lockouts and strikes in Italy, report on	571-574
Lumber industry, accidents in	429, 430
Lumbering and woodworking, Mexican laborers employed in	494
Mail clerks, railway, accident liability of	446, 447
Manufactures in Bulgaria, census of, digest of	559-564
Manufacturing industries, statistics of:	
Missouri	558, 554
Rhode Island	556, 557
Metal trades, accidents in	424, 425, 459, 460
Mexican immigrants to the United States, characteristics of	466, 467, 469
Mexican immigration to the United States, source of	468, 469
Mexican labor in the United States:	
Character of, and comparison with labor of other nationalities	496-501
Efficiency of	504-506
Home life and standard of living of	501-504
Method of distribution of	476, 476
Migration of, method and conditions of	469-474
Occupations of, miscellaneous	494-496
Race prejudice toward	511-513
Social conditions of	506-511
Mexican labor in the United States employed in—	
Farming	482-485
Lumbering and woodworking industries	494
Mining	485-493
Railroad work	477-482
Mexico, effects in, of Mexican emigration to the United States	513-519
Mine laborers, Mexican, wages of	488-493
Mineral oil industry, accidents in	442, 443
Mines and quarries, accidents in	436-444
Mining, electrical, risk in	442
Missouri, statistics relating to:	
Free employment offices	553-556
Labor organizations	555
Land, assessed valuation of	554, 555
Land, Government, acres of	553
Manufacturing industries	558
Prison shops	558, 554
Products, surplus, value of	556
Navigation, accidents in	558
Occupations in which Mexicans are employed	449-453
Oil industry, mineral, accidents in	477-496
Old Age Pensions Act of 1906, British	442, 443
Prevention of accidents, problem of	549-552
Prices, retail, and rates of wages, changes in, in Germany, between October, 1905, and March, 1906	457, 458
Prices, retail, of commodities paid by working classes:	
German Empire	546-548
German Empire and Great Britain compared	581-587
Printing trades, hours of labor in, in Germany compared with England	587-540, 546
Printing trades, rates of wages:	
German Empire	546
German Empire and Great Britain compared	540, 541
Prison shops in Missouri, statistics of	543, 544
Products, surplus, in Missouri, value of	556
Quarries and mines, accidents in	558
Race prejudice toward Mexican labor in the United States	480-444, 463
Rail, transportation by, accidents in	511-513
Railway accident problem, discussion of	444-449
	449

	Page
Railway employees, accident liability of. (See Accident liability of railway employees.)	
Railway laborers, Mexican, in the United States compared with other nationalities	477, 478
Railway mail clerks, accident liability of	446, 447
Refining and smelting, accidents in	442, 459
Rents of working-class dwellings:	
German Empire	526-529
German Empire and Great Britain compared	529, 530, 545, 546
Retail prices and rates of wages, changes in, in Germany, between October, 1906, and March, 1908	546-548
Retail prices of commodities paid by working classes:	
German Empire	581-587
German Empire and Great Britain compared	587-540, 546
Rhode Island:	
Accidents in textile industries	432
Manufacturing industries, statistics of	556, 557
Riggers, accident liability of	465
Risk, electrical, in mining	442
Russia, factory inspectors' reports for, digest of	574-576
Sawmills, accidents in	430, 431
Scope of discussion of industrial accidents	423, 424
Silver and gold mining, accidents in	441
Smelting and refining, accidents in	442, 459
Social aspects of the accident problem	458
Social conditions of Mexicans in the United States	506-511
Steel and iron manufacture, accidents in	425, 426
Strikes and lockouts in Italy, report on	571-574
Switchmen and flagmen, railway, accident liability of	446, 448, 464
Textile industries, accidents in	431-433
Trainmen, railway, accident liability of	445
Transportation by rail, accidents in	444-449
Transportation by water, accidents in	449-455
Wages in Mexico, effects of Mexican emigration to the United States on	513-516
Wages of Mexican laborers in the United States:	
Farming	483-484
Lumbering and woodworking industry	494
Mines	488-496
Railways	478-482
Various occupations	496
Wages, rates of, and retail prices, changes in, in Germany between October, 1906, and March, 1908	546-548
Wages, rates of, in the building, engineering, and printing trades:	
German Empire	540, 541
German Empire and Great Britain compared	543, 544, 546
Wages, statistics of:	
Bulgaria	562-564
German Empire	540-545
Wages, weekly, per cent of increases in, for five German towns between October, 1906, and March, 1908:	
Building trades	548
Engineering trades	547
Wage-workers in Bulgaria, statistics of	560-564
Water transportation, accidents in	449-455
Wharves and docks, accidents at	454
Working-class dwellings, rents of:	
German Empire	526-529
German Empire and Great Britain compared	529, 530, 545, 546
Working classes in Bulgaria, statistics of	560-564
Workshops and factories, accidents in	424-433
Zinc and lead mining, accidents in	439, 440

LEADING ARTICLES IN PAST NUMBERS OF THE BULLETIN.

- No. 1. Private and public debt in the United States, by George K. Holmes.^(a)
Employer and employee under the common law, by V. H. Olmsted and S. D. Fessenden.^(a)
- No. 2. The poor colonies of Holland, by J. Howard Gore, Ph. D.
The industrial revolution in Japan, by William Eleroy Curtis.
Notes concerning the money of the U. S. and other countries, by W. C. Hunt.
The wealth and receipts and expenses of the U. S., by W. M. Steuart.
- No. 3. Industrial communities: Coal Mining Co. of Anzin, by W. F. Willoughby.
- No. 4. Industrial communities: Coal Mining Co. of Blanzy, by W. F. Willoughby.^(a)
The sweating system, by Henry White.^(a)
- No. 5. Convict labor.
Industrial communities: Krupp Iron and Steel Works, by W. F. Willoughby.
- No. 6. Industrial communities: Familistère Society of Guise, by W. F. Willoughby.
Cooperative distribution, by Edward W. Bemis, Ph. D.
- No. 7. Industrial communities: Various communities, by W. F. Willoughby.
Rates of wages paid under public and private contract, by Ethelbert Stewart.
- No. 8. Conciliation and arbitration in the boot and shoe industry, by T. A. Carroll.^(a)
Railway relief departments, by Emory R. Johnson, Ph. D.^(a)
- No. 9. The padrone system and padrone banks, by John Koren.^(a)
The Dutch Society for General Welfare, by J. Howard Gore, Ph. D.^(a)
- No. 10. Condition of the Negro in various cities.^(a)
Building and loan associations.^(a)
- No. 11. Workers at gainful occupations at censuses of 1870, 1880, and 1890, by W. C. Hunt.
Public baths in Europe, by Edward Mussey Hartwell, Ph. D., M. D.
- No. 12. The inspection of factories and workshops in the U. S., by W. F. Willoughby.^(a)
Mutual rights and duties of parents and children, guardianship, etc., under the law, by F. J. Stimson.^(a)
The municipal or cooperative restaurant of Grenoble, France, by C. O. Ward.^(a)
- No. 13. The anthracite mine laborers, by G. O. Virtue, Ph. D.^(a)
- No. 14. The Negroes of Farmville, Va.: A social study, by W. E. B. Du Bois, Ph. D.^(a)
Income, wages, and rents in Montreal, by Herbert Brown Ames, B. A.^(a)
- No. 15. Boarding homes and clubs for working women, by Mary S. Fergusson.^(a)
The trade union label, by John Graham Brooks.^(a)
- No. 16. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.
- No. 17. Brotherhood relief and insurance of railway employees, by E. R. Johnson, Ph. D.^(a)
The nations of Antwerp, by J. Howard Gore, Ph. D.^(a)
- No. 18. Wages in the United States and Europe, 1870 to 1898.^(a)
- No. 19. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.^(a)
Mutual relief and benefit associations in the printing trade, by W. S. Waudby.^(a)
- No. 20. Condition of railway labor in Europe, by Walter E. Weyl, Ph. D.
- No. 21. Pawnbroking in Europe and the United States, by W. R. Patterson, Ph. D.
- No. 22. Benefit features of American trade unions, by Edward W. Bemis, Ph. D.^(a)
The Negro in the black belt: Some social sketches, by W. E. B. Du Bois, Ph. D.^(a)
Wages in Lyon, France, 1870 to 1896.^(a)
- No. 23. Attitude of women's clubs, etc., toward social economics, by Ellen M. Henriotin.^(a)
The production of paper and pulp in the U. S. from January 1 to June 30, 1898.^(a)
- No. 24. Statistics of cities.^(a)
- No. 25. Foreign labor laws: Great Britain and France, by W. F. Willoughby.^(a)
- No. 26. Protection of workmen in their employment, by S. D. Fessenden.^(a)
Foreign labor laws: Belgium and Switzerland, by W. F. Willoughby.^(a)

- No. 27. Wholesale prices: 1890 to 1899, by Roland P. Falkner, Ph. D.
Foreign labor laws: Germany, by W. F. Willoughby.^(a)
- No. 28. Voluntary conciliation and arbitration in Great Britain, by J. B. McPherson.^(a)
System of adjusting wages, etc., in certain rolling mills, by J. H. Nutt.^(a)
Foreign labor laws: Austria, by W. F. Willoughby.^(a)
- No. 29. Trusts and industrial combinations, by J. W. Jenks, Ph. D.
The Yukon and Nome gold regions, by S. C. Dunham.
Labor Day, by Miss M. C. de Graffenried.
- No. 30. Trend of wages from 1891 to 1900.
Statistics of cities.
Foreign labor laws: Various European countries, by W. F. Willoughby.
- No. 31. Betterment of industrial conditions, by V. H. Olmsted.
Present status of employers' liability in the U. S., by S. D. Fessenden.
Condition of railway labor in Italy, by Dr. Luigi Einaudi.
- No. 32. Accidents to labor as regulated by law in the U. S., by W. F. Willoughby.
Prices of commodities and rates of wages in Manila.
The Negroes of Sandy Spring, Md.: A social study, by W. T. Thom, Ph. D.
The British workmen's compensation act and its operation, by A. M. Low.
- No. 33. Foreign labor laws: Australasia and Canada, by W. F. Willoughby.
The British conspiracy and protection of property act and its operation, by A. M. Low.
- No. 34. Labor conditions in Porto Rico, by Azel Ames, M. D.
Social economics at the Paris Exposition, by Prof. N. P. Gilman.
The workmen's compensation act of Holland.
- No. 35. Cooperative communities in the United States, by Rev. Alexander Kent.
The Negro landholder of Georgia, by W. E. B. Du Bois, Ph. D.
- No. 36. Statistics of cities.
Statistics of Honolulu, H. I.
- No. 37. Railway employees in the United States, by Samuel McCune Lindsay, Ph. D.
The Negroes of Litwalton, Va.: A social study of the "Oyster Negro," by William Taylor Thom, Ph. D.
- No. 38. Labor conditions in Mexico, by Walter E. Weyl, Ph. D.
The Negroes of Cincire Central Factory and Calumet Plantation, La., by J. Bradford Laws.
- No. 39. Course of wholesale prices, 1890 to 1901.
- No. 40. Present condition of the hand-working and domestic industries of Germany, by Henry J. Harris, Ph. D.
Workmen's compensation acts of foreign countries, by Adna F. Weber.
- No. 41. Labor conditions in Cuba, by Victor S. Clark, Ph. D.
Beef prices, by Fred C. Croxton.
- No. 42. Statistics of cities.^(a)
Labor conditions of Cuba.^(a)
- No. 43. Report to the President on anthracite coal strike, by Carroll D. Wright.^(a)
- No. 44. Factory sanitation and labor protection, by C. F. W. Doehring, Ph. D.
- No. 45. Course of wholesale prices, 1890 to 1902.
- No. 46. Report of Anthracite Coal Strike Commission.
- No. 47. Report of the Commissioner of Labor on Hawaii.
- No. 48. Farm colonies of the Salvation Army, by Commander Booth Tucker.
The Negroes of Xenia, Ohio, by Richard R. Wright, jr., B. D.
- No. 49. Cost of living.
Labor conditions in New Zealand, by Victor S. Clark, Ph. D.
- No. 50. Labor unions and British industry, by A. Maurice Low.^(a)
Land values and ownership in Philadelphia, by A. F. Davies.^(a)
- No. 51. Course of wholesale prices, 1890 to 1903.
The union movement among coal-mine workers, by Frank J. Warne, Ph. D.
- No. 52. Child labor in the United States, by Hannah R. Sewall, Ph. D.
- No. 53. Wages and cost of living.
- No. 54. The working of the United States Bureau of Labor, by Carroll D. Wright.
Bureaus of statistics of labor in the United States, by G. W. W. Hanger.
Bureaus of statistics of labor in foreign countries, by G. W. W. Hanger.
The value and influence of labor statistics, by Carroll D. Wright.
Strikes and lockouts in the United States, 1881 to 1900, by G. W. W. Hanger.
Wages in the United States and Europe, 1890 to 1903, by G. W. W. Hanger.
Cost of living and retail prices in the U. S., 1890 to 1903, by G. W. W. Hanger.
Wholesale prices in the United States, 1890 to 1903, by G. W. W. Hanger.
Housing of the working people in the U. S. by employers, by G. W. W. Hanger.

- No. 54. Public baths in the United States, by G. W. W. Hanger.
Trade and technical education in the United States.
Hand and machine labor in the United States.
Labor legislation in the United States, by G. A. Weber.
Labor conditions in Hawaii.
- No. 55. Building and loan associations in the U. S., by G. W. W. Hanger.^(a)
Revival of handicrafts in America, by Max West, Ph. D.^(a)
- No. 56. Influence of trade unions on immigrants, by Carroll D. Wright.
Labor conditions in Australia, by Victor S. Clark, Ph. D.
- No. 57. Course of wholesale prices, 1890 to 1904.
Street railway employment in the United States, by Walter E. Weyl, Ph. D.
State Cooperative Accident Insurance Fund of Maryland.
- No. 58. Labor conditions in the Philippines, by Victor S. Clark, Ph. D.
Labor conditions in Java, by Victor S. Clark, Ph. D.
The new Russian workmen's compensation act, by I. M. Rubinow.
- No. 59. Wages and hours of labor in manufacturing industries, 1890 to 1904.
Retail prices of food, 1890 to 1904.
Laws relating to child labor in European countries.
- No. 60. Government industrial arbitration, by Leonard W. Hatch, A. M.
- No. 61. Labor conditions in Porto Rico, by Walter E. Weyl, Ph. D.^(a)
Early organizations of printers, by Ethelbert Stewart.^(a)
- No. 62. Municipal ownership in Great Britain, by Frederic C. Howe, Ph. D.^(a)
Conciliation in the stove industry, by John P. Frey and John R. Commons.^(a)
Laws relating to the employment of children in the United States.^(a)
- No. 63. Course of wholesale prices, 1890 to 1905.
- No. 64. Conditions of living among the poor, by S. E. Forman.
Benefit features of British trade unions, by Walter E. Weyl, Ph. D.
- No. 65. Wages and hours of labor in manufacturing industries, 1890 to 1905.^(a)
Retail prices of food, 1890 to 1905.^(a)
- No. 66. Third report of the Commissioner of Labor on Hawaii.
- No. 67. Conditions of entrance to the principal trades, by Walter E. Weyl, Ph. D.,
and A. M. Sakolski, Ph. D.^(a)
Cost of industrial insurance in the District of Columbia, by S. E. Forman.^(a)
- No. 68. Free public employment offices in the United States, by J. E. Conner, Ph. D.
Laws of foreign countries relating to employees on railroads, by Lindley D. Clark, A. M., LL. M.
- No. 69. Wholesale prices, 1890 to 1906.
- No. 70. The Italian on the land: A study in immigration, by Emily Fogg Meade.^(a)
A short history of labor legislation in Great Britain, by A. Maurice Low.^(a)
The British workmen's compensation acts, by Launcelot Packer, B. L.^(a)
- No. 71. Wages and hours of labor in manufacturing industries, 1890 to 1906.
Retail prices of food, 1890 to 1906.
- No. 72. Italian, Slavic, and Hungarian unskilled immigrant laborers in the United States, by Frank J. Sheridan.
Economic condition of the Jews in Russia, by I. M. Rubinow.
- No. 73. Laws relating to the employment of women and children.
Laws relating to factory inspection and the health and safety of employees.
- No. 74. The legal liability of employers for injuries to their employees, in the United States, by Lindley D. Clark, A. M., LL. M.
Workmen's compensation acts to foreign countries.
- No. 75. Wholesale prices, 1890 to 1907.
Industrial hygiene, by George M. Kober, M. D.
- No. 76. The Canadian Industrial Disputes Investigation Act of 1907, by Victor S. Clark, Ph. D.
What is done for the unemployed in foreign countries, by W. D. P. Bliss.
- No. 77. Wages and hours of labor in manufacturing industries, 1890 to 1907.
Retail prices of food, 1890 to 1907.
Cost of living of the working classes in the principal towns of Great Britain.

• Bulletin out of print.

**MORTALITY FROM CONSUMPTION IN DUSTY TRADES
CHARITY RELIEF AND WAGE EARNINGS**

DEPARTMENT OF COMMERCE AND LABOR

BULLETIN

OF THE

BUREAU OF LABOR

No. 79—NOVEMBER, 1908

ISSUED EVERY OTHER MONTH



**WASHINGTON
GOVERNMENT PRINTING OFFICE
1908**

REPORTS PUBLISHED BY THE BUREAU OF LABOR.

ANNUAL.

1886. First,	Industrial Depressions (out of print).....	496 pages
1886. Second,	Convict Labor (out of print).....	612 "
1887. Third,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1886) (out of print).....	1172 "
1888. Fourth,	Working Women in Large Cities (out of print).....	631 "
1889. Fifth,	Railroad Labor (out of print).....	888 "
1890. Sixth,	Cost of Production: Iron, Steel, Coal, etc. (out of print).....	1404 "
1891. Seventh,	Cost of Production: The Textiles and Glass (2 vols.) (out of print).....	2048 "
1892. Eighth,	Industrial Education (out of print).....	707 "
1893. Ninth,	Building and Loan Associations (out of print).....	719 "
1894. Tenth,	Strikes and Lockouts (Jan. 1, 1887, to June 30, 1894) (2 vols.) (out of print).....	1909 "
1895-96. Eleventh,	Work and Wages of Men, Women, and Children (out of print)	671 "
1897. Twelfth,	Economic Aspects of the Liquor Problem (out of print)	275 "
1898. Thirteenth,	Hand and Machine Labor (2 vols.) (out of print).....	1604 "
1899. Fourteenth,	Water, Gas, and Electric-light Plants under Private and Municipal Ownership (out of print).....	983 "
1900. Fifteenth,	A Compilation of Wages in Commercial Countries from Official Sources (2 vols.).....	1642 "
1901. Sixteenth,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1900) (out of print).....	1053 "
1902. Seventeenth,	Trade and Technical Education (out of print).....	1333 "
1903. Eighteenth,	Cost of Living and Retail Prices of Food (out of print)..	865 "
1904. Nineteenth,	Wages and Hours of Labor.....	976 "
1905. Twentieth,	Convict Labor.....	794 "
1906. Twenty-first,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1905)..	979 "
1907. Twenty-second,	Labor Laws of the United States.....	1562 "

SPECIAL.

1889. First,	Marriage and Divorce (out of print).....	1074 pages
1892. Second,	Labor Laws of the United States (second edition, revised, 1896) (out of print).....	1383 "
1893. Third,	Analysis and Index of all Reports issued by Bureaus of Labor Statistics in the United States prior to Nov. 1, 1892 (out of print) (a).....	376 "
1893. Fourth,	Compulsory Insurance in Germany, etc. (out of print)	370 "
1893. Fifth,	The Gothenburg System of Liquor Traffic (out of print)	253 "
1893. Sixth,	The Phosphate Industry of the United States (with maps and illustrations) (out of print).....	145 "
1894. Seventh,	The Slums of Baltimore, Chicago, New York, and Philadelphia (out of print).....	620 "
1895. Eighth,	The Housing of the Working People (with plans and illustrations) (out of print).....	461 "
1897. Ninth,	The Italians in Chicago (out of print).....	409 "
1904. Tenth,	Labor Laws of the United States (out of print).....	1413 "
1904. Eleventh,	Regulation and Restriction of Output (out of print)..	932 "
1905. Twelfth,	Coal Mine Labor in Europe (out of print).....	547 "

* New edition (1902) available for distribution.

DEPARTMENT OF COMMERCE AND LABOR

BULLETIN

OF THE

BUREAU OF LABOR

No. 79—NOVEMBER, 1908

ISSUED EVERY OTHER MONTH



WASHINGTON
GOVERNMENT PRINTING OFFICE
1908



Pres. C. W. Eliot.

CONTENTS.

Mortality from consumption in dusty trades, by Frederick L. Hoffman:	Page.
Introduction	633-641
Statistical data and method of determining the degree of consumption frequency.....	641-643
Occupation classification of dusty trades.....	643, 644
Occupations with exposure to metallic dust.....	644-681
Grinders.....	644-649
Polishers	649-652
Tool and instrument makers	652-657
Jewelers	657-660
Gold-leaf manufacture	660, 661
Brass workers.....	661-667
Printers	667-673
Compositors	673-675
Pressmen	676
Engravers.....	676-678
Summary of conclusions regarding occupations with exposure to metallic dust.....	678-681
Occupations with exposure to mineral dust.....	681-726
The stone industry	682-685
Stoneworkers	685-688
Marble workers	688-691
The glass industry.....	691-695
Glass blowers	695, 696
Glass cutters	696-699
Diamond cutters.....	699-701
Potters	701-708
Cement workers.....	708-711
Plasterers.....	711-714
Paper hangers.....	714-716
Foundrymen and molders.....	716-718
Core makers	718, 719
Lithographers.....	719-722
Summary of conclusions regarding occupations with exposure to mineral dust.....	722-726
Occupations with exposure to vegetable fiber dust	726-784
Cotton ginning	727-729
Cotton textile manufacture.....	729-737
Textile spinners	737-740
Textile weavers	740-742
Manufacture of hosiery and knit goods.....	743-746
Lace manufacture	746-750
Flax and linen manufacture	750-757
Hemp and cordage manufacture.....	757-762

Mortality from consumption in dusty trades, by Frederick L. Hoffman—Con.	Page.
Occupations with exposure to vegetable fiber dust—Concluded.	
Manufacture of jute and jute goods	762-767
Paper and pulp manufacture	768-771
Cabinetmakers	771-776
Wood turners and carvers	776-780
Summary of conclusions regarding occupations with exposure to vegetable fiber dust	780-784
Occupations with exposure to animal and mixed fiber dust	784-829
Furriers and taxidermists	784-789
Hatters	789-794
Silk manufacture	794-800
Woolen and worsted manufacture	800-808
Carpet and rug manufacture	808-813
Shoddy manufacture	813-817
Rag industry	817-821
Upholsterers and hair mattress makers	821-825
Summary of conclusions regarding occupations with exposure to animal and mixed fiber dust	825-829
General summary of results	829-833
Problem of ventilation and dust removal in industry	833-843
Appendix—17 tables	844-859
List of references on occupation mortality	859-875
Charity relief and wage earnings, by S. E. Forman:	
Introduction	876-878
Number, nativity, and size of families	879-882
Age and conjugal condition	882-884
Occupations	885-888
Earnings of charity recipients	888-893
Kind of aid given	893-897
Delinquencies of charity recipients	897-901
Causes of distress of charity recipients	901-918
Immediate causes of distress	904-910
Contributing or indirect causes of distress	910-912
Persistent causes of distress	913-918
Summary	919-922
Digest of recent reports of state bureaus of labor statistics:	
Maine—Twenty-first Annual Report, 1907: Factories, mills, and shops built—Labor unions—Women and children in sardine factories—School teachers—Child labor	923-928
Michigan—Twenty-fifth Annual Report, 1908: Beet sugar and Portland cement industries—Coal industry—Furniture, boot and shoe, corset, and refrigerator industries—Free employment bureaus—Electric railways—Power used in manufacturing in Michigan	926-929
New Jersey—Thirteenth Annual Report, 1907: Statistics of manufacture—Steam railroads—Cost of living—Fruit and vegetable canning—New Jersey as a manufacturing State—Industrial chronology	930-933
Ohio—Thirty-first Annual Report, 1907: Manufactures—Coal mining—Free public employment offices	934, 935
Digest of recent foreign statistical publications:	
Chile: Report on the creation and initiatory work of the office for the collection of labor statistics	936, 937
Italy:	
Report of the Bureau of Labor on the condition of employees in mines and quarries of Italy	937-941

Digest of recent foreign statistical publications—Concluded.

Report of the Bureau of Labor on wages and hours of labor of employees on public works.....	Page. 941, 942
Russia: Report on the number and distribution of wage-workers in Russia, based upon data of the first general census of the Russian Empire in 1897	942-949
Opinions of the Attorney-General on questions affecting labor :	
Eight-hour law—application to lock tenders.....	950, 951
Eight-hour law—application to watchmen, messengers, etc.....	951, 952
Decisions of courts affecting labor :	
Decisions under statute law	953-961
Employers' liability—employment of children—violation of statute—defenses—discovering age (<i>Synszewski v. Schmidt</i>)	953-955
Employers' liability—railroads—bridges over tracks—danger signals (<i>Chesapeake and Ohio Ry. Co. v. Rowsey's Administrator</i>)....	955, 956
Public work—protection of laborers and material men—contractors' bonds—assignment of claims (<i>Title Guaranty and Trust Co. v. Puget Sound Engine Works et al.</i>).....	956-958
Railroads—construction of shelters over repair tracks—constitutionality and construction of statute (<i>St. Louis, Iron Mountain and Southern Ry. Co. v. State</i>)	958-960
Suits for wages—attorneys' fees—constitutionality of statute (<i>Chicago, Rock Island and Pacific Ry. Co. v. Mashore</i>)	960, 961
Decisions under common law.....	961-967
Injunction—violation—contempt—persons not parties to original bill—notice—nature of proceedings (<i>Garrigan v. United States</i>)...	961-965
Strikes—injunction—picketing—interference with employment (<i>Jones et al. v. E. Van Winkle Gin and Machine Works</i>).....	965-967
Laws of various States relating to labor, enacted since January 1, 1904	968-1003
Cumulative index of labor laws and decisions relating thereto	1005-1037

BULLETIN
OF THE
BUREAU OF LABOR.

No. 79.

WASHINGTON.

NOVEMBER, 1906.

THE MORTALITY FROM CONSUMPTION IN DUSTY TRADES.

BY FREDERICK L. HOFFMAN.

INTRODUCTION.

The importance of dust as a factor in occupation mortality has attracted the attention of every authority on occupation diseases from Ramazzini to Thomas Oliver. It requires no extended consideration to prove that human health is much influenced by the character of the air breathed and that its purity is a matter of very considerable sanitary and economic importance. Aside from the risk of exposure to so-called air-borne diseases, the pollution of the atmosphere by organic and inorganic dust is unquestionably the cause of a vast amount of ill-health and premature mortality, but chiefly among men and women engaged in the many indispensable trades and occupations that minister to human needs. The sanitary dangers of air contaminated by disease-breeding germs are probably not so serious as generally assumed, while the destructive effects of the dust-laden atmosphere of factories and workshops are a decidedly serious menace to health and life. While the investigations of Doctor McFadden and Mr. Lunt seem to prove the paucity of bacteria in very dusty air, the evidence otherwise available is entirely conclusive that the risk to disease infection is much greater indoors than out in the open, where sunlight, rain, and wind in combination go far to purify the atmosphere by destroying the bacterial life contained in minute particles of suspended matter. Apart, however, from the transmission of disease through a dust-contaminated atmosphere, dust in any form, when inhaled continuously and in considerable quantities, is prejudicial to health because of its inherent mechanical properties, destructive to the delicate membrane of the respiratory passages and the

Ch. 3/18/24 10.0.000

lungs. It has long been known that those who live most of their time out of doors have a decided advantage over those who, because of their employment, are compelled to spend their working hours inside the home, the office, the factory, or the workshop, and it is an accepted axiom of modern sanitary science that measures and methods for the prevention of dust are a first and preliminary essential consideration in rational methods of sanitary reform. All that sanitary science can suggest or that sanitary legislation can regulate and change should be done for humane reasons and as a matter of governmental concern to mitigate the needless hardships of those who suffer in health and life as the result of conditions over which they themselves have but a very limited control.

The importance of dust as a factor in occupation diseases has been emphasized by all who have written on the subject, but by no one more precisely and clearly than by Sir James Crichton-Browne, in his address on the Dust Problem, read at the Sanitary Congress held at Manchester, England, in 1902, from which the following is quoted:

The mortality of the principal dust-producing occupations, compared with that of agriculturists, who live and work in what is practically dustless atmosphere, is excessive to a startling degree. It is not suggested that this excess is to be ascribed to dust alone, no doubt various factors contribute to it, but the facts that it is due mainly to respiratory diseases, that it is distributed amongst the several occupations pretty much in proportion to their dustiness, and that it has diminished in some instances where dust has been effectually dealt with, justify the conclusion that it is largely dust begotten.

Sir Crichton-Browne in continuation of his remarks pointed out that a detailed examination of the conditions of work in each of the 22 principal dusty trades brought out clearly the fact that the unhealthiness was born of or was primarily due to the dust inhaled by the workmen, and that there was always a well-defined relation between the death rate and the quantity and quality of dust present in the atmosphere. There is apparently no very material difference in the manner in which the different varieties of dust act upon the human organism, except where, in addition to mechanically injurious properties, the dust is of a poisonous character, which leads to diseases such as lead poisoning, phosphorous poisoning, anthrax poisoning, etc. Industrial mineral dust apparently acts with greater rapidity upon the lungs than organic dust, which is slower and more insidious in its operations, but in a general way follows similar lines. All varieties of dust, the immediate result of occupation, are, therefore, comprehended under the term of "industrial dust," which is specifically defined by Sir Crichton-Browne, as follows:

I select this dust for my further remarks because it is readily recognized and defined, because its pernicious effects are well marked and indisputable, because it is to a large extent, if not entirely, pre-

ventable or removable, and because the efforts already made to prevent or remove it have been rewarded with conspicuous benefit. And I still further simplify and abbreviate what I have to say by restricting my observations to those varieties of it which are dust and nothing more, which are injurious by their physical properties and mechanical operations, and not as poisons to the systems, chemical destructives of the tissues, or bearers of bacterial invaders.

A similar but even more restricted limitation has been adopted for the present purpose, and only such occupations will be considered in detail in the following discussion as expose to the continuous and considerable inhalation of metallic, mineral, and vegetable fiber dust, and in which the evidence is at least fairly conclusive that the resulting disease liability and mortality from consumption and other respiratory diseases is above the average for occupied males generally.

Preliminary to a discussion in detail of the mortality from consumption in dusty trades it may prove of decided advantage to those who do not have access to the original sources of information to present a brief summary of qualified medical opinion regarding dust as a factor in occupation diseases and mortality. In a course of lectures on Unhealthy Trades, delivered before the Society of Arts, London, in 1876, Dr. B. W. Richardson^(a) placed injuries from the inhalation by the lungs of fine particles of solid matter, usually defined as dust, at the head of the causes responsible for industrial diseases, and from his discussion the following is quoted:

The term "dusts," as I would here apply it, includes all those fine, solid particles which are thrown off from various substances in the processes of manufacture or treatment of articles in common use in daily life, such as earthenware utensils, knives, needles, or mechanical instruments, like files or saws; or ornamental things, such as ornaments of pearl, ivory, and turned wood; or articles that are worn, of silk, cotton, hemp, fur; or things that are used for food, such as flour; or for creating warmth, such as coal; or for using as a supposed luxury, such as tobacco and snuff. These are only a few illustrations; many others will naturally occur to those who think on the subject.

The dusts which inflict injury are of varied quality, as will be seen from the brief sketch just given. They are also of varied effect in regard to the specific injuries which they produce. We may profitably study them divided into different groups, according to their physical characters, as follows:

(a) Cutting dusts, formed of minute hard, crystallized particles which have sharp, cutting, and pointed edges. These dusts are composed of iron or steel, of stone, of sand or glass, of dried silicates in earthenware, of lime, of pearl.

(b) Irritant dusts, derived from woods, from ivory, from textile fabrics, fluffs of wool, of silk, of cotton, of flax, and of hemp, from hair, from clay.

(c) Inorganic poisonous dusts, derived from some poisonous chemical compounds used for coloring artistic products, or for preserving

^a Scientific American Supplements, Numbers 9, 10, 18, 19, and 22, dated, respectively, February 23, March 4, April 29, May 6, and May 27, 1876.

organic substances, such as furs. These dusts are charged with arsenical salts.

(d) Soluble saline dusts, derived from soluble crystalline substances used for dyeing purposes. The sulphate of iron, copperas, yields a dust of this class.

(e) Organic poisonous dusts, which are thrown off during the making up of tobacco into cigars and snuff. These dusts carry with them particles of the dried tobacco plant.

(f) Obstructive and irritating dusts composed of carbon, of fine particles of coal dust, of scrapings of carbon or of soot, of dust of rouge, and of flour.

Whatever may be the kind of dust to which the workman is subjected, to whichever of the above named he may be exposed, the primary cause of danger lies in the circumstance that the fine particles are borne by the air into the lungs. They pass, wafted by the air, through the mouth and nostrils into the windpipe; they pass along the bronchial tubes; in some instances they reach and traverse the bronchial passages which lie between the larger bronchial tubes and the minute air vesicles, or they even reach the air vesicles themselves.

An American authority on occupation diseases has referred to the subject at some length in an article contributed to Buck's Hygiene and Public Health, printed in 1879. This writer, Dr. Roger S. Tracy, for many years registrar of vital statistics of New York City and sanitary inspector of the board of health, makes the following statement with particular reference to the special form or type of disease resulting from the inhalation of metallic and mineral dusts:

The disease comes on very gradually, like the more slowly developed forms of phthisis pulmonalis, and its duration may be extended over four or five years. It begins with the cough of irritation, dry and hacking at first, with very scanty expectoration, whitish and stringy in character; there is no hæmoptysis, but sometimes nausea and vomiting in the morning. Auscultation at this time reveals puerile respiration, with occasional slight râles. The expectoration gradually increases in amount and becomes reddish, and soon after this tinge appears there may be hæmoptysis. There is dyspnoea on slight exertion, and dullness over the whole chest, with weak respiration and mucous râles. There is no fever, and the appetite and strength are still good. If work is abandoned at this time recovery is not only possible, but in most cases probable. If work is continued, the lung tissue begins to break down, and cavities form near the apices. Expectoration is very profuse, and there may be severe hemorrhages. There is general dullness on percussion, and the last traces of vesicular respiration give way to sibilant, large mucous and cavernous râles. Fever is continuous, with evening exacerbations, night sweats, emaciation, insomnia, and great dyspnoea, soon followed by death.

Very suggestive also are the observations and conclusions of Dr. John Syer Bristowe, F.R.S., who in an address on industrial diseases, read at the conference on sanitary subjects held in connection with

the International Health Convention of 1884, discussed the effects of noxious irritants on the lungs, in part as follows:

Occupations which habitually expose the workmen to the inhalation of abundant solid particles that are incapable of solution or removal by the animal tissues or secretions, in many cases induce chronic diseases of the lungs, which are known as the asthmas or consumptions of the several occupations referred to, and tend very materially to shorten life among those engaged in them. Workers in coal mines and in copper mines, grinders, millstone makers, and flax dressers are perhaps especially liable to suffer from such causes. It is marvelous how tolerant the bronchial tubes and lungs are of foreign particles which are drawn into them with the breath. Wherever smoke impregnates the atmosphere, as in London and other manufacturing towns, its particles are conveyed in greater or less abundance into the lungs; whence some are expelled with the expectoration, which presents, consequently, a slaty or black appearance, while some get absorbed, and becoming deposited in the tissue of the lungs, produce in them that black mottling which increases with advancing years, and is well known to pathologists. Yet, as a general rule, the soot-studded organs remain practically healthy, and no clinical evidences of pulmonary disease manifest themselves. The same remarks doubtless apply to the inhalation of the siliceous particles of ordinary dust. The effects are different, however, when such matters are inhaled in large excess. * * * The symptoms under which the sufferers labor have some resemblance to those of chronic phthisis, some to those of chronic bronchitis and emphysema, for either of which they may well be mistaken. They consist in gradually increasing shortness of breath, lividity of surface, feebleness of circulation, and cough, with more or less abundant expectoration; to which, at a later period, general dropsy and hæmoptysis may be superadded. There is generally a total, or almost total, absence of fever. The only methods, so far as I know, by which the irritative diseases of the lungs, just considered, can be lessened or prevented, are by providing good ventilation, and (when possible) by adopting methods to prevent the diffusion of particles or dust in the atmosphere which the workmen have to breathe. It is obvious, too, that since the diseases are insidious in their progress, and increase in proportion as the inhaled particles accumulate, it would be well for persons who present early traces of them to seek at once some other kind of employment.

The most qualified and extended discussion of the entire subject of the inhalation of dust, its pathology and symptomatology, with special reference to dusty trades, is by Dr. J. T. Arlidge, who, in 1892, published a treatise on *The Hygiene, Diseases, and Mortality of Occupations*. "Few, indeed," he argued, "are the occupations in which dust is not given off," and "in none can it be absolutely harmless, for the lung tissue must be just so much the worse, and less efficient for its purpose, in proportion to its embarrassment by dust." And in continuation:

What occurs to the ordinary citizen becomes magnified ten or a hundredfold to those engaged in dusty occupations, and more espe-

cially where the dust itself possesses noxious properties. But unless dust has this latter quality, it is remarkable with what indifference its inhalation is treated by the majority of workmen. In one sense, indeed, it is unfortunate that it does not, for the most part, awaken attention by any immediate tangible consequences. Its disabling action is very slow, but it is ever progressive, and until it has already worked its baneful results upon the smaller bronchial tubes and air cells and caused difficulty of breathing, with cough and spitting, it is let pass as a matter of indifference—an inconvenience of the trade.

Arlidge called attention to the fact that bronchitis, asthma, and fibroid and tubercular consumption ranked foremost in the causes of British mortality, holding that without doubt these maladies were largely attributable to the inhalation of dust operating per se, or in conjunction with constitutional proclivities and insanitary surroundings. In further continuation he remarked that—

Pathologists tell us of the presence of bacilli in tubercular disease, and favor the belief that these minute bodies are the cause of it. This notion may represent a whole truth or only a partial one; in my opinion, the latter. For I doubt if these bacilli actually develop phthisis unless there be some antecedent change in the vitality of the affected tissue; a change wrought by depressing causes connected with the mode of life, or with constitutional debility and inherited taint, or with the occupation followed; of which contributory factors two or more may cooperate. And assuredly the breathing of dust may be reckoned as one such of no light energy. In other words, I look upon a phthisical lung as one prepared for the germination and multiplication of bacilli, and not a primary product of those microscopic organisms, nor of the products of their organic existence.

The conclusions of Arlidge are summarized in the statement that "One practical lesson is to be gained by these considerations—namely, that persons predisposed to respiratory diseases and phthisis ought not to engage in dusty occupations."

More recently the entire subject of occupation diseases in their relation to workmen's compensation has been considered at length and in much detail by a British departmental committee appointed to consider the pressing and important question of workmen's compensation for industrial diseases. In its observations upon respiratory diseases, and in particular bronchitis, pneumonia, and phthisis, and their relation to occupation exposure, the committee concluded that—

Pulmonary disease manifests itself in three kinds or forms—as ordinary tuberculous phthisis, acute or chronic; as "fibroid phthisis," and as a mixed form when a tuberculous process is ingrafted sooner or later upon the fibroid. Fibroid phthisis is always a slow disease. It consists in a chronic reactive inflammation around the many minute foci of dust inhalation, which by coalescence gradually invades large areas, impairing and strangling the proper lung tissues in corresponding measure. Again, a lung so impaired is very apt to har-

bor bacilli, especially the bacillus of tubercle, by the influence of which it may be still further destroyed. Thus both fibroid phthisis uncomplicated and fibroid phthisis with the supervention of tubercle are in their nature occupational disease.^(a)

The committee, in its final report, describes the typical forms of fibroid phthisis as induced by the inhalation of industrial dust, holding that—

The first symptom is a cough which insidiously, and for a while almost imperceptibly, becomes habitual. At first in the morning only, it gradually becomes more frequent during the day, and expectoration, nominal at the beginning, becomes more marked, though not profuse until the latter stages of the disease. Leaving out of account the more rapid progress of the disease in tin and gold miners, these symptoms of a negative phase of purely local damage may last for years—ten or fifteen or even more—without advancing to such a degree as to throw the workman out of employment or even to cause him serious inconvenience. At some period, however, rarely less than ten years and frequently more than twenty, of continuous employment, in a like imperceptible manner the breathing gets shorter and the patient finds himself less and less capable of exertion. Yet, even when the cough and dyspnoea have reached a considerable degree, there are no signs of fever, as is the case of pulmonary tuberculosis; the flesh does not fall and the muscles retain their strength and volume. Thus even at a period when the malady is fully established the general health may be but little impaired, and the patient may not be compelled to cease work. Herein fibroid phthisis presents a well-marked difference from pulmonary tuberculosis; and even if, as we have said, the disease becomes complicated with tubercle, yet the rate of progress may be determined rather by the character of the primary than of the secondary disease, though usually the supervention of tubercle hastens the sufferer into a more rapid consumption.^(a)

The results of all these researches into an almost neglected field of preventive hygiene prove that occupation diseases, properly so called, demand the most thoroughly qualified and medical supervision of factories and workshops and the periodical medical examination and inspection of persons employed in recognized unhealthy trades. For, as the committee referred to points out, "If in the early stage of fibroid phthisis the workman leaves the dusty employment for work in agriculture or in other occupation in air free from irritating particles, the disease may be practically arrested; that is, although the part affected may proceed to obliteration, the disease would not extend to other parts of the lung, and the portion destroyed would be negligible as a factor of health and capacity."^(b)

^a Report of the Departmental Committee on Compensation for Industrial Diseases, 1906, p. 13.

^b Report of the Departmental Committee on Compensation for Industrial Diseases, 1906, p. 14.

The conclusion of this investigation, the most important official inquiry ever made into the subject of industrial diseases, fully warrants the view that while ordinary tuberculous phthisis can not be regarded as a disease specific to any occupation, fibroid phthisis in its latter stage, and when the history of the case is known, can be clearly distinguished from tuberculous phthisis, so that it may be regarded as an established fact that fibroid phthisis is a disease specific to the employment in certain trades, of which the committee mentions the following: Grinders, continuously using either grindstones or emery for the abrasion of metals, especially steel; potters engaged in certain processes; stone workers employed on certain kinds of stone, especially if not working in the open air; tin miners, in particular such as have previously been exposed to the exceedingly unhealthy conditions of the gold mines of the Transvaal; and ganister miners, including men employed in certain processes of ganister brick making. The committee did not arrive at final conclusions regarding persons employed in the slate industry, nor of employees in the working of asbestos, and many other recognized unhealthy trades, partly, no doubt, because of the limited scope of the inquiry and the paucity of conclusive statistical data. It is pointed out by the committee that it was not possible to separate the English death rates from fibroid phthisis from those of other diseases of the respiratory system, since medical men do not, as a rule, distinguish that disease when certifying the causes of death. It is clearly established by the results of the investigation that such a distinction should be made and that medical practitioners should qualify the death returns from tuberculosis in all cases where the death was the result of fibroid phthisis.

The committee, having arrived at the opinion that fibroid phthisis is a specific and distinguishable trade disease, concluded that employers might properly be required to pay compensation to their work people who contract it; but it did not, however, recommend the extension of the Workmen's Compensation Act to the disease for two reasons. The first was that owing to the long period of its development it would not be right to lay the whole burden on the employer under whom the workman had been serving during the twelve months prior to the incapacity. The other and more important reason was that for several years before the nature of the disease can be definitely diagnosed the patient may suffer from symptoms that while not distinctive are sufficient to prevent him from securing employment.

In the partly descriptive account of 42 occupations considered in detail in this article only the most general facts have been included to emphasize, as far as possible, the industrial processes productive of conditions more or less injurious to health in general and to the development of tuberculosis in particular. Authorities are referred to only as far as this has seemed necessary to clearly establish in the

case of each trade or occupation considered the facts of a more or less excessive degree of consumption frequency aside from the statistical sources of information which form the basis of the subsequent conclusions, except in the case of a few employments for which neither general vital statistics nor insurance mortality experience are as yet available. The term "tuberculosis" is used in a very general sense, and as a rule limited to phthisis pulmonalis, or consumption, unless otherwise stated. All of the references to insurance mortality experience are limited to the mortality from phthisis pulmonalis and do not include other forms of tuberculosis or other forms of respiratory diseases unless specifically stated in the text.

STATISTICAL DATA AND METHOD OF DETERMINING THE DEGREE OF CONSUMPTION FREQUENCY.

The principal statistical data used in the present discussion are, first, the occupation returns by divisional periods of life of the United States census for 1900; second, the occupation mortality statistics of the Twelfth Census, published in 1904; third, the occupation mortality statistics of Rhode Island for the decade ending with 1906; fourth, the occupation mortality statistics published decennially as a supplement to the report of the Registrar-General of Births, Marriages, and Deaths for England and Wales for the two periods 1890-1892 and 1900-1902; fifth, the corresponding statistics for Scotland; and sixth, the industrial mortality statistics of the Prudential Insurance Company of America for the decade 1897 to 1906, published in connection with the company's exhibit of the mortality from consumption in dusty trades at the International Congress on Tuberculosis, held in Washington, D. C., in 1908, and presented in a discussion of the same subject before the American Association of Medical Examiners in September, 1907, and the Medical Society of the County of New York in December, 1907.

Four different statistical methods are available to determine with approximate accuracy the degree of consumption frequency in different trades. Absolute accuracy is not obtainable in investigations of this kind, nor is it necessary for the end in view.

The first method is to determine the numbers living at ages 65 or over in different trades, and to compare the same with the corresponding proportion for occupied males generally. This method is never conclusive by itself, but is useful in conjunction with the use of other statistical data. It is evident, of course, that other factors besides mortality determine the proportion of persons at work in different occupations at ages 65 or over, and the method, therefore, requires to be used with extreme caution.

The second method is to determine the true rate of mortality from all causes, or specific causes such as consumption, by ascertaining the number of deaths occurring in every thousand persons of any particular trade or industry exposed to the risk of death for a single year. This method is by far the most satisfactory, but it is seldom that accurate information is available regarding the living population, and estimates of the numbers exposed to risk are likely to be seriously misleading. The chance of error is increased by the method employed in the Twelfth Census, since the occupation classification of the census is probably not exactly the same as the occupation classification of the different boards of health throughout the country, where the original entries are made as to the occupation of decedent at the time of death.

The third method is to determine the proportion of deaths from a specified cause, such as consumption, occurring in the mortality from all causes, without reference to ages at death. This method is made necessary in the use of the Rhode Island statistics, which are not returned by divisional periods of life. The same is true also of the occupation mortality statistics of the United States census by specified causes, but when used with extreme caution the proportions thus determined are often extremely suggestive and quite often entirely conclusive.

The fourth method is known as the proportionate mortality figure, by which the proportion of deaths from any particular disease, such as consumption, is calculated as a percentage of the deaths from all causes occurring during specified periods of life. This method has been extensively employed in the present discussion, since otherwise the available industrial insurance mortality statistics could not have been utilized. It is, in a measure, the most satisfactory and determining of all the various methods referred to, since it determines with absolute accuracy the actual incidents or degree of consumption frequency at specified periods of life.

The industrial insurance mortality statistics are derived from the experience of a large and representative company, which has from time to time given publicity to the facts of its experience. The resulting proportionate mortality returns, however, indicate a specific mortality from consumption somewhat below the actual, since the experience is, to a certain extent, affected by medical selection. In other words, the proportionate mortality from consumption, or the true actual loss from the disease at specified periods of life, would have been somewhat higher if medical selection had not been made use of. In comparing this experience with the adopted standard for the registration area of the United States the comparison is, therefore, somewhat more favorable to the various trades and occupations considered than would have been the case if the returns could have

been derived from the registration records of the different States and cities comprehending the experience of the company referred to.

The proportionate mortality figure may be briefly explained as follows: At ages 25 to 34, out of every 100 deaths from all causes in the registration area of the United States during the seven years ending 1906, 31.3 deaths were from consumption. The corresponding proportions of deaths in the industrial insurance mortality experience were 70.8 per cent for grinders, 66.7 per cent for compositors, 58.5 per cent for upholsterers, 52.9 per cent for potters, etc. The difference between the normal proportionate consumption mortality for the registration area as a whole and the corresponding proportionate mortality from consumption in the different occupations considered in detail, measure approximately the health-injurious circumstances of the different employments.

OCCUPATION CLASSIFICATION OF DUSTY TRADES.

The following occupation grouping has been adopted to emphasize the dust hazard in principal occupations and to facilitate ready reference to the various employments considered in some detail in the subsequent discussion:

Group 1.—Exposure to metallic dust:

1. Grinders.
2. Polishers.
3. Tool and instrument makers.
4. Jewelers.
5. Gold leaf manufacture.
6. Brass workers.
7. Printers.
8. Compositors.
9. Pressmen.
10. Engravers.

Group 2.—Exposure to mineral dust:

11. Stone workers.
12. Marble workers.
13. Glass blowers.
14. Glass cutters.
15. Diamond cutters.
16. Potters.
17. Cement workers.
18. Plasterers.
19. Paper hangers.
20. Molders.
21. Core makers.
22. Lithographers.

Group 3.—Exposure to vegetable fiber dust:

23. Cotton ginning.

Group 3.—Exposure to vegetable fiber dust—Concluded.

24. Cotton textile manufacture.
25. Spinners.
26. Weavers.
27. Hosiery and knitting mills.
28. Lace making.
29. Flax and linen manufacture.
30. Hemp and cordage manufacture.
31. Manufacture of jute and jute goods.
32. Paper manufacture.
33. Cabinetmakers.
34. Wood turners and carvers.

Group 4.—Exposure to animal and mixed fiber dust:

35. Furriers and taxidermists.
36. Hatters.
37. Silk manufacture.
38. Woolen and worsted manufacture.
39. Carpet and rug manufacture.
40. Shoddy manufacture.
41. Rag industry.
42. Upholsterers and hair-matress makers.

The grouping is necessarily a more or less arbitrary one since all occupations involve exposure to more than one particular kind of

dust, but it is safe to assume that the predominating character of a particular dust exposure primarily determines the resulting departure of the consumption mortality from the normal for the general population. All the groupings of dusty trades which have been adopted by Hirt, Merkel, Arlidge, Oliver, and others have this limitation in common. Since no entirely conclusive investigation has been made to afford the material for a final and strictly scientific classification of dusty trades, the grouping adopted will serve at least the purpose of a convenient arrangement with a strict regard to the facts as they are known and understood at the present time.

OCCUPATIONS WITH EXPOSURE TO METALLIC DUST.

In the group of occupations exposing to a continuous and considerable inhalation of metallic dust resulting from industrial processes have been included for the present purpose the following representative employments: Grinders, polishers, tool and instrument makers, jewelers, gold-leaf manufacture, brass workers, printers, compositors, pressmen, and engravers. These occupations are all more or less subject to an excessive death rate from all causes, but in particular to a decided excess in the proportionate mortality from consumption, and in most cases also to a comparatively high degree of frequency in the occurrence of other respiratory diseases. The details of labor conditions, as far as they could be conveniently included in the following summary of observations regarding particular trades, appear to fully confirm the opinion that the degree of excess in consumption frequency is intimately related and in almost exact proportion to the degree of exposure to continuous and considerable inhalation of metallic dust.

GRINDERS.

The grinding trade includes a large variety of employments, of which metal grinding, by either the dry or wet process, is hygienically as well as industrially the most important. The grinding of metal involves exposure to decidedly health-injurious conditions, probably as much so if not more than in any other employment. Chiefly as the result of the inhalation of relatively large quantities of fine metallic dust, and not inconsiderable quantities of fine mineral dust, the mortality from consumption in this occupation is decidedly above the normal for occupied males generally. While the sanitary and other conditions injuriously affecting the health of metal grinders never have been so notoriously bad in the United States as in England or in continental Europe, the observed mortality of this occupation as carried on in this country fully warrants the most serious conclusions as to the health-injurious effects of this group of employments.

The mortality of metal grinders has been discussed by James H. Lloyd, M. D., in his treatise on "Diseases of occupations," included in the Twentieth Century Practice of Medicine, published in 1895. Lloyd, after calling attention to the well-known fact that the trade of the grinder is conspicuous above all others for the suffering that is entailed from the inhalation of metallic dust, describes in detail the different processes of grinding and their relation to health, from which the following is quoted:

Grinding edge tools is of two kinds—wet and dry. The latter method is by far the more injurious, as, naturally, it raises far the greater amount of dust. For some tools both methods are used—the mixed method. The tools ground are scythes, saws, table knives, machine knives, various other kinds of edge tools, files, penknives, razors, scissors, forks, needles, etc. A great difference in their bad effects is observed among the branches of the trade according as the grinders use the wet or dry method and according to the tool ground. The smaller objects are far the most trying and exacting upon health. The worst of all branches are the fork grinding and needle grinding. This is because in grinding these small objects the workman is obliged to lean close over the stone and therefore inhales large quantities of the dust, and also because the dry grinding is used.

The dust raised by grinding is composed largely of minute bits of steel. According to Hall, 12 razor blades forged in the rough, which weigh 2 pounds and 4 ounces, lose 10 ounces in the process of grinding. This loss represents so much fine metallic dust, mingled of course with dust from the stone. This statement gives some idea of the immense amount of dust produced by dry grinding. According to Holland the concrete masses of this dust formed in needle grinding have almost the specific gravity of iron.

In discussing the symptoms of the diseases typical of grinders as the result of their employment, Lloyd points out further that—

They are those of a slowly advancing bronchitis with asthma and sometimes with emphysema; later dilated bronchi with excavation are observed; then, consolidation, and breaking down of lung tissue occur as the terminal processes. The exact relationship of these processes to a tubercular infection in grinders is an interesting and important subject, which, of course, did not receive much light from the earlier writers. They endeavored, in fact, to draw distinctions between true "consumption" and grinder's "asthma," but the state of pathological knowledge in their day was not such as to permit them to do otherwise. It is quite evident from reading their reports of cases that they had to do with a disease that was essentially tubercular, but it would be interesting to have the exact relationship of this infection to the grinder's unwholesome occupation investigated by the methods of modern bacteriology. I do not know whether this has ever been done. There can be no doubt that the influence of the grinder's trade is that of a predisposing cause. The inhalation of the irritating particles of steel into the lungs causes a constant catarrhal bronchitis and pneumonitis, with increase of connective tissue; and this prepares the soil for a tubercular infection which characterizes the latter stages of the disease.

The most recent qualified discussion of the health-injurious circumstances of dry and wet grinding is by Oliver, who, in his *Diseases of Occupation*, goes fully into all the details concerning the trade, including a brief account of the corresponding conditions in the cutlery manufacture of Germany, at Solingen:

So far as the two methods of grinding cutlery are concerned, the dry method is, from a health point of view, the more dangerous to the workers. The dust is dry, and is in the form of a very fine powder, which readily reaches the lungs owing to the attitude of the men when at work. Steel grinders sit astride the grinding stone on a saddle, and as they lean forward keeping close to their work, they can not but inhale some of the dust, which is a mixture of steel and stone. Forks and needles are generally ground by the dry method; knives, scissors, and razors by the wet. Some are ground by both methods, e. g., the backs of razors and scissors are ground by the dry method and the remainder of the blade by the wet. It was in 1865 that Dr. T. C. Hall, of Sheffield, drew attention to the high death rate of steel grinders from pulmonary phthisis. The average age at death of steel grinders was at this period only 29 years, but of late this has improved. Doctor Hall's statistics referred to dry grinding. In wet grinding the running stone passes through a thin layer of water in a trough below the stone, so that, as its surface is always kept wet, comparatively little dust is given off during the process of grinding; but while the atmosphere is clearer of dust, the floors and walls of the workshop are damp and cold. The grinding is carried on in rooms called "hulls," which are bounded by three blank walls; the windows are without glass. Where dry grinding is carried on there are fans, but these often prove ineffective. It is no uncommon thing to find men engaged in different processes in one large room, so that the dust which is generated affects not only the workman sitting at his own grinding stone, but the other inmates of the room as well. In Sheffield it has been ascertained that in every 1,000 deaths among steel grinders pulmonary phthisis is the cause of 345 and other respiratory diseases 295; that is, collectively, pulmonary diseases account for 64 per cent of the entire mortality, whereas among the adult population of the country generally phthisis accounts for 144 deaths per 1,000 and other respiratory diseases 182, or collectively 32.6 per cent. Steel grinders die comparatively young. Dr. Sinclair White, in *Dangerous Trades*, page 414, says that 458 grinders in every 1,000 die between the ages of 35 and 55, compared with 261 in every 1,000 of the entire male population of the country. Only 140 grinders out of every 1,000 reach the age of 55 and upward, whereas for every 1,000 of the adult male population 391 reach 55 years and upward. Sinclair White is of the opinion that phthisis is not so rife among steel grinders as formerly. In Doctor Hall's time the average age at death from phthisis was 29 years; at present it is 43.*

With reference to conditions in Germany and the remarkable improvement which has followed the introduction of sanitary precau-

* *Diseases of Occupation*, Thomas Oliver, pp. 230, 231, London, 1908.

tions, rational methods of ventilation, and other means of dust prevention, Oliver holds:

In the town of Solingen and the neighborhood it is estimated that there are 29,000 persons employed in making cutlery. Here all sorts of steel goods are made—knives, forks, scissors, and swords. A good deal of the work is done by the people in their homes, and it is interesting to know that the home industry is rather encouraged by the local authority, which provides the men with gas and electric power. So prevalent is pulmonary consumption among the grinders in Solingen that it has attracted the attention of the Government Factory Department. In the ten years 1885–1895 72.5 per cent of the deaths among knife grinders in the Solingen district was due to phthisis, against 35.3 per cent for the rest of the population over 14 years of age, and an official examination showed that out of 1,250 grinders only 85 men were over 45 years of age. Doctor Shadwell speaks approvingly of the methods adopted in some of the Solingen factories to deal with the removal of dust. Oldendorf, in writing about the grinders at Solingen, states that 24.7 per cent reached 50 years of age and 3.3 per cent 70; that at Runsched 33.8 per cent reached 50 years and 8.0 per cent 70; while at Kronenberg the numbers were 32.9 and 8.7, respectively. The mean age at death of grinders employed in the dry methods was 39.4, of workers in iron 48.3, and of the rest of the male population 54.4 years. Taking all ages, the deaths from tuberculosis per 100 cases were for grinders 78.3, iron workers 59.0, other persons 46.0. (*)

A very interesting account of the mortality of cutlery grinders in Solingen was also included in the Report of the Chief Inspector of Factories and Workshops of England for 1906, from which an abstract is made to emphasize the sanitary and labor conditions necessary to reduce the mortality of grinders to a minimum:

The atmosphere of Solingen is bright and clear. It is seldom that black smoke is seen escaping from the factory chimneys. This is largely the result of careful firing and the use of coal briquettes instead of ordinary coal, which avoids the use of slack coal. The day's actual work is nine hours; on Saturday work ceases at 5.30 p. m. The factories in Solingen are said to be marvels of order and cleanliness; the floors are of concrete and the air space for each worker must be at least 565 cubic feet. All the grinding stones are protected by guards. The walls of the workrooms are limewashed every year; the floors are swept every evening and damp-wiped once a week. The "rasing" of grindstones is never undertaken during working hours except under a stream of water or unless the stone is entirely inclosed in casing except at the working place of the rasing tool. The floors are kept clean and provision is made for the removal of the dust during grinding. Cutlery manufacture is recognized as a dangerous trade in Solingen, and in recent years considerable improvement has taken place in the means to prevent dust. In Solingen the grindstones and polishing wheels are run toward the worker; in Shef-

* Diseases of Occupation, Thomas Oliver, p. 232.

field they are run away from the worker, so that the dust has an upward tendency and flies into the room.^(a)

The subject is also considered in the Report of the Chief Inspector of Factories and Workshops for 1907, in which the rules or police regulations governing the trade at Solingen are republished in full. A remarkable improvement in the health of the workmen has followed the introduction of these rules.

The most conclusive mortality data of metal grinders are for Sheffield, England, and from the annual reports of the medical officer of health are tabulated the deaths of grinders occurring within the period 1889 to 1906, including 2,045 deaths from all causes, of which 837 were from consumption and 543 from respiratory diseases other than consumption. The data are given in tabular form below, by divisional periods of life, with the resulting mortality from consumption and other respiratory diseases at specified ages:

PROPORTIONATE MORTALITY FROM CONSUMPTION AND FROM OTHER RESPIRATORY DISEASES COMPARED WITH THAT FROM ALL CAUSES AMONG GRINDERS, IN SHEFFIELD, ENGLAND, 1889 TO 1906, BY AGE GROUPS.

[From annual reports of the Medical Officer of Health, Sheffield, England.]

Age at death.	Deaths from all causes.	Deaths from consumption.		Deaths from respiratory diseases other than consumption.	
		Number.	Per cent.	Number.	Per cent.
Under 25 years.....	85	36	42.4	20	23.5
25 to 34 years.....	246	135	54.9	44	17.9
35 to 44 years.....	416	235	56.5	69	16.6
45 to 54 years.....	575	263	45.7	151	26.3
55 to 64 years.....	452	139	30.8	167	36.9
65 years or over.....	271	29	10.7	92	33.9
Total.....	2,045	837	40.9	543	26.6

According to this table, at ages under 25, of every 100 deaths from all causes, 42.4 were from consumption, increasing to 56.5 at ages 35 to 44, decreasing subsequently to 30.8 at ages 55 to 64, and to 10.7 at ages 65 or over. The corresponding mortality from respiratory diseases other than consumption was also excessive at every period of life.

There are no similar data for the United States except the industrial insurance mortality statistics of grinders, limited to 128 deaths from all causes, of which 63, or 49.2 per cent, were from consumption. Of the mortality of grinders from respiratory diseases other than consumption, 15 were from pneumonia, 5 from asthma and bronchitis, and 2 from other respiratory diseases. If the deaths from consumption and other respiratory diseases are combined, a total of 85, or 66.4 per cent of the mortality of grinders, was from diseases of

^a Report of the Chief Inspector of Factories and Workshops, 1906, pp. 107-109.

the lungs and air passages. The excess in the mortality of grinders from consumption is clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life compared with that of all males in the registration area of the United States: (a)

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG GRINDERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for grinders from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of grinders, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Grinders.	Males in registration area, 1900 to 1906.
15 to 24 years.....	7	4	57.1	27.8
25 to 34 years.....	24	17	70.8	31.3
35 to 44 years.....	38	24	63.2	23.6
45 to 54 years.....	30	12	40.0	15.0
55 to 64 years.....	20	5	25.0	8.1
65 years or over.....	9	1	11.1	2.7
Total.....	128	63	49.2	14.8

While according to this table the proportionate consumption mortality of grinders was excessive at all ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes, 70.8 were from consumption, against a normal expected proportion of 31.3. The data are unfortunately very limited, but they are at present the only trustworthy source of information regarding the mortality of grinders in the United States. The number of deaths is sufficient, however, to warrant the conclusion that the mortality from consumption in this occupation is very considerably above the normal for the general population.

POLISHERS.

The polishing of metal ware is a widely diversified trade, and the term "polisher" is one of general rather than of special significance. Under the term are included metal polishers and buffers working upon steel, brass, gold, and silverware, but no data are available which would permit of a proper classification of polishers according to the metal or material manipulated. The health-injurious effects of this employment have been recognized by all who have written

^a The registration area, from which mortality statistics were secured by the Bureau of the Census, included in 1906 about one-half (48.8 per cent) of the total estimated population of continental United States.

upon the mortality of dusty trades, and the more important facts are summarized by Arlidge in part as follows:

After being shaped and ground to the required dimensions, the next business is to burnish or polish the articles. This is accomplished by wheels covered by leather, and also by a thick bundle of linen rags cut and bound together in the form of a wheel, and which, by rapid rotation, assumes the character of a solid mass, and, at the same time, one so soft as to serve better than any other contrivance for the purpose of surface polishing. To assist in giving polish to the articles made various powders are employed; for example, emery, whiting, rouge, powdered pumice, etc. The use of these materials adds vastly to the dust of the trade and to its pernicious results; but no data are in existence to indicate what is its share in the causation of disease as compared with the dust of the grindstones. Still, no question exists that these polishing powders, differing as they do among themselves in physical qualities, differ likewise in the range of their effects upon the lungs.

The rather involved circumstances affecting the polisher's health and mortality are also discussed in *The Workers of the Nation*, by Mr. Gilson Willets, whose attention appears to have been attracted by the particularly health-injurious conditions of the employment, and whose conclusions are decidedly suggestive:

Metal polishers who have reached the age of 40 often look like old men. There can hardly be found a trade more deleterious to health, say those who follow it. Among the harmful conditions may be mentioned the liability of the workmen to get their lungs full of flying and impalpable dust, which is composed of metal, minerals, and cotton fiber. They are also, in many cases, deprived of the proper supply of light, and great injury to the eyes thus arises. It is not easy to wear goggles or glasses, as the operator's sight must be of the keenest in order to detect blemishes. There are laws for the protection of this class of workmen, but they are too seldom employed. New York statutes require that at each polishing lathe there shall be an exhaust fan to carry off the dust, that each operative shall have 250 square feet of air to breathe, and plenty of light. It has been claimed that not in 5 per cent of the shops do these desirable provisions prevail. A buffing wheel, making 2,500 revolutions per minute, has wrecked many constitutions. From it, as the polisher applies the metal, a cloud of dust arises, made of particles of cloth and metal, and that is what the operator breathes. Generally the windows are hermetically sealed. Often the walls and floors are covered with the accumulation of years. In the process of brightening silver-plated material there is given forth by the wheel a cloud of dust of which crocus is a large constituent, while from the plating room come fumes of nitric acid. In the process of polishing chandeliers there is much dust set free, which is composed of particles of brass, and permeates the air of the shop. Metal polishers often do not care to complain, because their wages are high. Here is a good field for activity among the factory inspectors, who should force employers to maintain proper conditions in the shops. (*)

* *The Workers of the Nation*, Vol. I, p. 57.

More recent evidence has been presented in the published sickness and mortality experience of the Metal Polishers' Union, regarding which it has been stated that:

The treasury of this union, in spite of the fact that the men are steady and have no special temptations to excess, was found to be constantly exhausted. The reason is that the death claims eat up all the funds. An investigation of these claims showed that many of the men were dying from pulmonary tuberculosis. There were some deaths from accident, a few suicides, but the rest were all from pulmonary diseases—and pneumonia was very rare as compared with phthisis. The statistics for the last four years show that in 1903, 45 metal polishers died, of whom 43 succumbed to some lung trouble. In 1904 there were but 38 deaths among the metal polishers, of which only 3 were due to other causes than pulmonary disease. In 1905 there were 70 deaths among the metal polishers, 65 of which were due to some form of lung trouble. In New York City a local union having 170 men working exclusively on the precious metals, had 8 death claims in two years, 7 being due directly to tuberculosis, while 400 men employed in all the other branches of the same industry have had but 3 deaths from this cause in the same space of time.

A medical journal, commenting upon the above-quoted facts at the time of their publication, argued very pointedly to the effect that—

It would seem from these statistics that even the cleanest kinds of dust, without a trace of infectious material in them, may still prove a source of the greatest possible danger and be the indirect cause of tuberculosis. This has been known for some time, but so startling a confirmation of it is sure to emphasize the necessity for taking every precaution for the avoidance of dust. Even what might seem to be the most innocuous of dirt particles may, when inspired, constitute foci of irritation in which tubercle bacilli may readily find a favorable nidus for implantation and growth.

There are, unfortunately, no official vital statistics of polishers except the recorded mortality for Rhode Island for the period 1897 to 1906, which, however, includes only 42 deaths of polishers from all causes, but of this number 14, or 33.3 per cent, were from consumption. There were 4 deaths from pneumonia and 2 from asthma and bronchitis, a total of 20 deaths from diseases of the lungs and air passages, or 47.6 per cent of the mortality from all causes.

The Rhode Island statistics are fully confirmed by the recorded industrial insurance mortality data of polishers, which includes 279 deaths from all causes, of which 108, or 38.7 per cent, were deaths from consumption. Of the mortality of polishers from respiratory diseases other than consumption, 25 were from pneumonia, 5 from asthma and bronchitis, and 5 from other respiratory diseases. If the deaths from consumption and other respiratory diseases are combined, it is found that 51.2 per cent of the mortality of polishers was from

diseases of the lungs and air passages. The excess in the mortality of polishers from consumption is clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG POLISHERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for polishers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of polishers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Polishers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	48	22	45.8	27.8
25 to 34 years.....	75	42	56.0	31.3
35 to 44 years.....	68	29	42.6	23.6
45 to 54 years.....	48	11	22.9	15.0
55 to 64 years.....	19	4	21.1	8.1
65 years or over.....	21	.....	.....	2.7
Total.....	279	108	38.7	14.8

While according to this table the proportionate consumption mortality of polishers was excessive at all ages under 65, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 56 were from consumption, against a normally expected proportion of 31.3. The number of deaths of polishers included in the analysis is sufficient to warrant the conclusion that the mortality from consumption in this occupation is very considerably above the normal for the general population, but below the corresponding averages for grinders.

TOOL AND INSTRUMENT MAKERS.

The manufacture of tools and instruments includes a large number of grinders and polishers, but it is not possible to classify the occupations in detail. In the United States census statistics the industry includes cutlery manufacture, while in English mortality statistics the group comprehends tool, file, and saw makers, cutlers and scissors makers, and needle and pin makers. The statistics of 1900 for the United States return 26,997 males of known ages 15 or over employed in this industry as previously defined, and of this number 666, or 2.5 per cent, were 65 years of age or over. The proportion attaining to old age was, therefore, somewhat larger than expected, considering the high rate of mortality of grinders and polishers, and others employed in the manufacture of tools, instruments, etc. A special investigation into the sanitary conditions of this employment was made by the Massachusetts state board of health in 1907, and the

report included a number of very valuable and suggestive references to conditions unfavorable to health and life, from which the following extracts are made:

From a sanitary point of view, the one important part of this industry is the reduction of the surface of the article in process of manufacture from the roughness of the original casting to the smoothness and brilliancy so necessary and desirable in the finished product. This involves successive treatment by wet grinding, dry grinding on emery and corundum wheels, and polishing with rouge on buffing wheels. Each of these processes, even that of wet grinding on large, coarse, and finer stones, causes to be cast into the air large amounts of fine dust, made up of very fine particles of steel and of the abrasive substance. In establishments properly equipped and conducted, provision is made to reduce the danger of this dust to a minimum by means of hoods connected with a system of exhaust fans or blowers. In spite of the precautions taken to protect their health, a very large proportion of grinders recklessly remove the hoods, and thus expose themselves unnecessarily to this especially dangerous form of dust. They assert that they prefer freedom of movement with dust to the protection afforded by hoods.

The workmen are not, as a class, long lived; indeed, the nature of the work is not compatible with longevity, and a person entering upon it in middle life is unlikely to follow it many years. Whatever the age at which the trade is taken up, a man in sound health who has followed it a few years is an acknowledged rarity. A study of the death returns of the city of Northampton, which is one of the centers of this industry, for the past twelve years, yields facts which can be interpreted in only one way. During this period tuberculosis is given as the cause of death in no less than 54.5 per cent of those whose occupation is indicated by "grinder" or "polisher," and in 45.4 per cent of those designated generally as "cutlers" and of the latter 36.4 died of pneumonia. Taken together, the "grinders," "polishers" and "cutlers" returns show that, during this period, diseases of the lungs were responsible for 72.73 per cent of their mortality. As was shown in the preliminary report on this industry, the tuberculosis death rate for cutlers in Northampton is four times as high as that for the entire adult male population.

A serious problem in the cutlery and tool industry is how to secure effective ventilation, and many of the factories and workshops inspected were found to be seriously defective in this respect. A large proportion of the workmen, including many young boys, are exposed to considerable dust, chiefly, of course, in the grinding and polishing departments. While much has been done to improve the sanitary conditions by artificial ventilation, there has been but a very languid cooperation on the part of the operatives themselves, and many, in fact, are interfering with the arrangements made for their protection to the extent of removing the hoods and exhaust pipes installed for the purpose of removing the dust.

The United States census vital statistics do not include the mortality of tool and instrument makers, and the only official statistics are

those of the state board of health of Rhode Island. During the decade 1897 to 1906 there were recorded in Rhode Island 44 deaths of tool makers from all causes, and of this number 9, or 20.5 per cent, were from consumption, and 5, or 11.4 per cent, from other respiratory diseases. The total mortality from diseases of the lungs and air passages was 14, or 31.9 per cent, against an expected percentage of 30.3 for all occupied males in Rhode Island. Fortunately there are more conclusive data regarding this occupation. The most valuable official statistics are those for England and Wales, published at decennial intervals in the supplements to the reports of the registrar-general of births, marriages, and deaths. Only two comparatively recent investigations are here referred to. The first of these, for the three years ending with 1892, included 2,529 deaths from all causes, of which 505, or 20 per cent, were from consumption. Of diseases of the respiratory system other than consumption, 384 deaths were from bronchitis, 286 from pneumonia, and 78 from other diseases of this group, a total of 748, or 29.6 per cent, of the mortality from all causes. Combining the mortality from consumption and other respiratory diseases, it is found that 49.5 per cent of the deaths of tool and instrument makers, as previously defined, were from diseases of the lungs and air passages.

The most recent English mortality statistics of tool and cutlery manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

In the occupation as a whole the mortality at ages under 25 is below the standard for occupied and retired males; but among file makers the death rate at these ages exceeds the standard. Beyond age 25 the mortality in the whole occupation, as well as among cutlers and file makers, considerably exceeds the standard. At ages 45 to 65 years the death rate among cutlers is 72 per cent and that of file makers is 84 per cent above the average. Within the main working period of life the comparative mortality figure for the whole occupation is 1,315, or 31 per cent, above the standard. The mortality from lead poisoning is nine times and that from phthisis is nearly double the standard, and these workers suffer excessively from nervous, circulatory, respiratory, and urinary diseases. On the other hand, the mortality from alcoholism and liver disease and from accident is about half the average. Among cutlers and file makers the comparative mortality figures considerably exceed the average for the entire occupation, the figure for the former being 56 per cent above the standard for all occupied and retired males, while that for the latter is 69 per cent in excess. Indeed, these two occupations appear to be the most unhealthy in the whole group of workers in metal. It should be mentioned in this place that the occupation of file maker is one that is specially liable to lead poisoning, the mortality figure for plumbism being no less than 56, whilst among all occupied and retired males the mortality is represented by unity.

File makers experience more than twice the average mortality from nervous diseases and nearly four times the average from Bright's disease, but cutlers experience comparatively little excess of mortality from either of these causes. In both industries the mortality from phthisis is enormous, the figure for cutlers being nearly three times and that for file makers more than twice the standard, and in both occupations the mortality from respiratory diseases approaches double the standard. Both these workers, however, experience a low mortality from influenza, from alcoholism and liver disease, and from accident, while among file makers the mortality from cancer is also less than normal.^(*)

The English occupation mortality statistics for men employed at tool, instrument, and cutlery making are quite conclusive of the more or less unfavorable effects of this industry on health. In the table which follows a comparison is made of the mortality from all causes among men in this group with occupied males generally, and the result is decidedly suggestive of conditions in this trade more or less unfavorable to life and health, but in particular at ages 45 or over, when the general mortality of this class exceeds the general average by from 8.24 to 12.26 per 1,000.

MORTALITY FROM ALL CAUSES AMONG TOOL, INSTRUMENT, AND CUTLERY MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for tool, instrument, and cutlery makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.09	- 0.35	86
20 to 24 years.....	4.41	3.32	- 1.09	75
25 to 34 years.....	6.01	6.32	+ .31	105
35 to 44 years.....	10.22	13.65	+ 3.43	134
45 to 54 years.....	17.73	25.97	+ 8.24	146
55 to 64 years.....	31.01	42.05	+ 11.04	136
65 years or over.....	88.39	100.65	+ 12.26	114

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of tool, instrument, and cutlery makers from consumption and other respiratory diseases is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that at ages 20 or over the mortality

* Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, pp. lxi, lxx.

from consumption is excessive among tool, instrument, and cutlery makers, but decidedly so at ages 35 to 64, inclusive. The table further shows that the mortality from other respiratory diseases is excessive among men in this class, but decidedly so at ages 45 or over, reaching the highest rate at ages 65 or over, when the excess is 7.69 per 1,000. The two tables, derived from English experience, fully confirm the previous conclusion that the mortality of tool, instrument, and cutlery makers is excessive when comparison is made with the normal mortality of occupied males generally and that this excess is largely because of a high degree of consumption frequency, particularly at ages 25 to 64, when the excess is from 0.91 to 4.09 per 1,000. The table which follows requires no further comment and is otherwise self-explanatory:

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG TOOL, INSTRUMENT, AND CUTLERY MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for tool, instrument, and cutlery makers.			Death rate per 1,000 for all occupied males.	Death rate for tool, instrument, and cutlery makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.17	-0.37	31	0.24	0.23	-0.01	96
20 to 24 years.....	1.55	1.57	+ .02	101	.48	.56	+ .08	117
25 to 34 years.....	2.03	2.94	+ .91	145	.77	1.14	+ .37	148
35 to 44 years.....	2.74	5.90	+3.16	215	1.66	2.01	+ .35	121
45 to 54 years.....	3.04	7.13	+4.09	235	3.32	5.40	+2.08	163
55 to 64 years.....	2.16	5.26	+3.10	244	6.54	10.42	+3.88	159
65 years or over...	1.11	1.97	+ .86	177	17.77	25.46	+7.69	143

The recorded industrial insurance mortality statistics of tool and instrument makers include 303 deaths from all causes, of which 101, or 33.3 per cent, were from consumption. Of the mortality of tool and instrument makers from other respiratory diseases, 25 were from pneumonia, 9 from asthma and bronchitis, and 5 from less frequent respiratory diseases. If the deaths from consumption and other respiratory diseases are combined, it is found that 46.3 per cent of the mortality of tool and instrument makers was from diseases of the lungs and air passages. The excess in the consumption mortality of tool and instrument makers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality of

tool and instrument makers was excessive at all ages, the excess was most pronounced at 25 to 34, when out of every 100 deaths from all causes 59.3 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of tool and instrument makers in detail is set forth in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG TOOL AND INSTRUMENT MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for tool and instrument makers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of tool and instrument makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Tool and instrument makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	40	13	32.5	27.8
25 to 34 years.....	59	35	59.3	31.3
35 to 44 years.....	68	24	35.3	23.6
45 to 54 years.....	56	21	37.5	15.0
55 to 64 years.....	32	4	12.5	8.1
65 years or over.....	48	4	8.3	2.7
Total.....	303	101	33.3	14.8

The preceding observations and statistical data fully confirm the conclusion that tool and instrument makers, including under this term many similar employments, but in particular the manufacture of cutlery inclusive of grinding and polishing, represent a trade subject to decidedly health-injurious circumstances which are responsible for the comparatively high degree of consumption frequency disclosed by both the general vital statistics of the occupation and the observed mortality of this class in industrial insurance experience.

JEWELERS.

The manufacture of jewelry in all its branches involves a large variety of manipulations, including the melting and refining of small quantities of the precious metals, and the handling, shaping, cutting, and polishing of precious stones. An important part of the industry is engraving and die cutting, which, however, for the present purpose, is separately considered as a well-defined occupation, and although often included with jewelers, it is equally often included with printers and compositors. Most of the articles made by jewelers are of small dimensions, such as chains, rings, brooches, pins, and buckles, which require painstaking care in handling and continuous eye-straining attention in shaping and polishing. Aside from the

use of gold and silver, many other metals and mineral substances are employed, such as jet, coral, tortoise, bone, ivory, etc. Zinc is also extensively used as an alloy and for coloring purposes. The gems require to be cut with extreme care, and the work of the diamond polisher and lapidary constitutes, next to the gold and silver smith, important separate branches of the trade. The manufacture of artificial gems, made of a paste, chiefly of a vitreous substance prepared from rocks and crystals or flint powder, subsequently treated with nitric acid with lead and borax as a flux, forms another important subdivision of the industry.

The work of the jeweler is naturally an indoor occupation, involving a stooping position, much like that of the engraver. The workshops are generally small and the ventilation is usually poor. The dust generated in the process of hammering, cutting, shaping, grinding, polishing, etc., is considerable, but very minute, and not easily observed. The dust accumulations are preserved and sold to refining plants, for remelting and the recovery of precious substances. The health problem is complicated by the universal use of blow-pipe apparatus and of gas for heating purposes. In large factories the use of machinery is increasing, but chiefly in connection with the manufacture of imitation jewelry and stones.

The unhygienic condition of many jewelry workshops and the general effect of this employment on health were discussed at some length in an early treatise by Thackrah, from which is quoted the following:

The jewelers' workrooms are generally crowded, and the atmosphere consequently fouled by respiration, animal effluvia, and the smoke of lamps, as well as by the specific exhalations of the manufacture. Its temperature is generally raised, and in summer the heat is excessive. The labor is light, but the confinement to a leaning posture, with the head much depressed, and the elbows generally fixed to the sides of the trunk, for ten, fourteen, or sixteen hours a day, is irksome and injurious. Intemperance is general, and dram drinking especially prevalent. The disorders of which jewelers principally complain are pains and soreness of the chest, disorders of the stomach and liver, and plethoric affections of the head. They enter the employ about 13 or 14 years of age and are obliged to abandon it generally at 45 to 50.^(a)

Thackrah continues that "an old jeweler is seldom to be found, and leaving work, they seem to leave the world as well." That this rather unfavorable view regarding the health conditions in the jewelers' trade is not exaggerated is made evident by the fairly trustworthy vital statistics of the trade. The English mortality data of jewelers and allied occupations for the three years ending with 1902, include 2,823 deaths from all causes, of which 598, or 21.2 per cent, were from

^a Effects of Arts, Trades, and Professions on Health and Longevity. C. Turner Thackrah, London, 1832, p. 115.

consumption. In addition to a high mortality from consumption there were 164 deaths from bronchitis and 247 from other respiratory diseases, a total of 1,009 deaths, or 35.7 per cent, from diseases of the lungs and air passages in the mortality from all causes.^(a)

In Rhode Island the jewelry industry has attained to very large proportions, constituting one of the most important industries in that State. During the ten years ending with 1906 the number of deaths of jewelers recorded was 557 from all causes, and of this number 173, or 31.1 per cent, were from consumption, and 51, or 9.2 per cent, from other respiratory diseases; of the total mortality, therefore, 224 deaths, or 40.3 per cent, were from diseases of the lungs and air passages. No corresponding information is available for other States, but in Massachusetts an investigation was made in 1907 into the hygiene of this trade under the direction of the state board of health, the results of which, however, were rather inconclusive. The opinion arrived at regarding the relation of this employment to health was a rather favorable one, it being stated that in general the appearance of the employee "is healthy and many who have followed the industry for twenty or more years speak of the work as being entirely consistent with good health." This favorable opinion, however, may be called into question in view of the very high proportionate mortality from consumption among jewelers and others employed in the jewelers' trade. In amplification of the previous reference to the Rhode Island statistics, it may be stated that during the half century ending with 1902, 1,252 deaths of jewelers were recorded, of which 480, or 38.3 per cent, were from consumption. There were also 80 deaths from pneumonia, 18 from asthma and bronchitis, or a total of 578 deaths, or 46.2 per cent, from diseases of the lungs and air passages in the mortality from all causes.

The recorded mortality of jewelers in industrial insurance experience includes 403 deaths from all causes, of which 113, or 28 per cent, were from consumption. Of the mortality of jewelers from other respiratory diseases, 37 were from pneumonia, 10 from asthma and bronchitis, and 2 from other respiratory diseases. The deaths from consumption and other respiratory diseases combined show that 40.2 per cent of the mortality of jewelers was from diseases of the lungs and air passages. The excess in the consumption mortality of jewelers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality of jewelers was excessive at all ages, the excess was most pronounced at 25 to 34, when out of every

^a The English data include watch and clock makers, makers of scientific instruments, and other more or less closely allied trades. For this reason the English statistics are not strictly comparable with other data for jewelers and are, not, therefore, presented here in tabular form.

100 deaths from all causes 59.5 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of jewelers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG JEWELERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for jewelers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of jewelers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Jewelers.	Males in registration area, 1900 to 1906
15 to 24 years.....	60	24	40.0	27.8
25 to 34 years.....	74	44	59.5	31.3
35 to 44 years.....	50	22	44.0	23.6
45 to 54 years.....	59	13	22.0	15.0
55 to 64 years.....	77	7	9.1	8.1
65 years or over.....	83	3	3.6	2.7
Total.....	403	113	28.0	14.8

The preceding observations and statistical data confirm the conclusion that jewelers as a class are subject to an excessive mortality from consumption, but in particular at ages 25 to 34, and that this excess is in a large measure the result of health-injurious circumstances connected with the employment.

MANUFACTURE OF GOLD LEAF.

The work of the gold leaf beater is nearly all hand work, excepting in the operation of the rolling machines. The trade is carried on to-day in practically the same manner as in ancient times. The weight of the hammer used will average 18 pounds, which is more than that of the hammer used by the average blacksmith. Girls, as a rule, are employed in connection with the less arduous operations and the final packing of the gold leaves in boxes and packages. The tissue used in connection with this process is coated with red chalk, the dust of which, of course, enters into the atmosphere of the rooms, usually badly ventilated. One of the chief difficulties in connection with ventilation is the fact that the slightest draft of air will carry the scrap of gold leaf from one anvil to another and make packing operations difficult or impossible. Evidence that the fine particles of gold enter the atmosphere is found in the fact that workmen with beards turn in less waste gold than clean-shaven workmen, and they are now required to wash themselves before leaving the shop, the water being filtered for the recovery of the metal contained therein.

Thackrah, writing in 1832, held that gold-beating must be considered a distinct employment, aside from the metal trade generally. Gold-beaters are about half the day engaged in beating the metal with heavy hammers and the rest in spreading the gold leaf on paper. By this change in employment the process affords an excellent alternation of labor and comparative rest. In his opinion, the men were not exposed to health-injurious conditions and were generally healthy and robust.^(a) It is difficult, however, to accept these conclusions in their entirety. The work of the gold-beater is carried on in rooms the air of which is more or less contaminated and where proper provision for ventilation is extremely difficult, if not impossible. The work is commenced at rather early ages and quite a considerable proportion of young persons are employed. Whether gold dust is itself injurious has never been scientifically determined, but it is quite probable that it is less injurious than other metallic dust.

There are no general vital statistics for this occupation other than the published industrial insurance mortality experience data and these are limited to only 25 deaths from all causes. Of this number 7 were from consumption and 5 from pneumonia and other respiratory diseases. For all ages 28 per cent of the deaths were from consumption, and at 25 to 34 the proportionate mortality from this disease was 50 per cent. The very limited number of observed cases does not warrant a final conclusion, but the statistical evidence would seem to confirm the view that the consumption mortality in this occupation is above the average. The sanitary problems in this industry are complicated by the fact that the work is, as a rule, carried on in small shops, to which it is most difficult to apply rational principles of factory legislation.

BRASS WORKERS.

Brass workers, exclusive of brass polishers and buffers, who have been separately considered, constitute a large group of widely diversified and often quite unlike employments. Brass casting, founding, and molding are arduous occupations exposing to the inhalation of considerable quantities of mineral dust more or less mixed with metallic ingredients. Whether brass dust, as such, is more injurious than the dust of iron and steel, for illustration, has not been determined. In the evidence submitted to the Departmental Committee on Compensation for Industrial Diseases by the National Society of Amalgamated Brass Workers,^(b) including about 7,000 members, it was

^a Effects of Arts, Trades, and Professions on Health and Longevity, by C. Turner Thackrah, 1832, p. 48.

^b Minutes of Evidence, Departmental Committee on Compensation for Industrial Diseases, 1906, p. 75 et seq.

stated that about 2,000 of these were engaged in casting. The trade was said to be divided into pattern making, chasing, casting, finishing, burnishing, polishing, and putting together. The corresponding classification of the trade in the United States follows practically similar lines.^(*) Of the groups mentioned, casting and founding were considered the most injurious to health. Burnishing was held to be less injurious than polishing, but the so-called putting together was stated to be decidedly unhealthful on account of the use of white lead. Evidently, in so diversified a trade the degree of dust exposure must vary widely, and at best the degree of injury can only be measured approximately upon the basis of more or less indefinite mortality data. The exposure of brass workers to dust inhalation is only one of a number of specific factors in the trade decidedly injurious to health and life, and of these mention may be made of the exposure to fumes and vapors generated in the smelting processes. Brass founder's ague is a well-defined occupation disease, the symptoms of which are tightness of the chest with indefinite nervous sensation, followed by fever and previous sweating. Zinc and other fumes inhaled are the chief causes of this ailment, and it is quite probable that the lung injury resulting from the inhalation of fine particles of metallic dust is a material contributory cause in brass founder's ague. Arlidge, in summing up the views of other authorities on brass workers' disease, points out that—

Besides brass founding, there are other departments in the brass-working business that are damaging to health; and chiefly so by reason of the dust produced. These branches are brass casting, turning, filing, and polishing. The soft nature of brass is opposed to the development of very fine and acuminate particles, and its weight to its rising very freely and to its diffusion in the air. Nevertheless, those turning and filing it show clearly, by their clothes and hair, that it is largely dispersed; the latter getting green, as happens with brass founders. The inhalation of brass dust operates in similar fashion to that seen in connection with other metallic dusts, provoking bronchial catarrh, which advances to bronchitis and ends in fibrosis. It is reported by some writers that phthisis is unusually prevalent, but no reliable statistics are available to support this statement.

More recent investigations in England fully confirm these earlier conclusions. In 1894 a departmental committee was appointed by the secretary of state to report upon the conditions of work as affecting the health of operatives in the manufacture of brass and kindred amalgams. In its report, which was published in 1896, the committee stated as the result of its investigation, first, that brass workers as a class were extensively liable to diseases of the respiratory or-

^{*} The number of brass workers in the United States in 1900 was 26,760, but of this number 890 were women.

gans, and, second, that brass founder's ague, so called, was found to result from the inhalation of fumes given off by the molten brass at the time of pouring, but in a less degree it was attributed to the contamination of the workers' food by the fumes, and that this danger was in proportion to the amount of zinc used in the alloy. The subject was also reported upon in much detail in the Report of the Chief Inspector of Factories and Workshops for the year 1905. From this report the following suggestive extracts are made:

Altogether some 500 brass workers were examined, and in addition to the filling in by each one of them of the appended form, note was made of the height, weight, chest measurement, and strength of grasp; the heart, lungs, gums, and teeth were, whenever practicable, examined, and the condition as to anemia, paresis, general health, and prevalence of brass founder's ague was determined.

The result of the replies of 216 casters and 199 polishers and others to the question, Do you consider that your health has been in any way injured by working in brass? was that 22.7 per cent of the casters and 11.6 per cent of the polishers and others said they had suffered. This is perhaps the strongest evidence obtained in the inquiry that the casters are exposed to more trying conditions of work than are other brass workers.

The nature of the injury was, as a rule, only very vaguely expressed; in the case of the casters it was nearly always either "fumes" or "sulphur," and in that of the polishers "dust." In one casting shop, where 19 strip casters were examined, of whom 9 said they suffered, illness or discomfort was attributed in some cases to resin fumes in addition to those ordinarily present. Among the casters there were indications that the older the workers were, and also that the earlier the age of commencement of work, the more did they say they had suffered, facts which could not be observed in the case of the polishers.

In 8 casters (3.9 per cent) definite physical signs in the lungs were found, and similarly in 3 (1.5 per cent) of the polishers and others. In two of the casters these pointed to chronic phthisis, while the remainder pointed to bronchial catarrh. I am not inclined to draw any conclusions from these facts, because (1) the number of observations is too small, (2) the examination in some of the factories was carried out under great disadvantages, owing to the impossibility of securing a quiet room, and (3) it is well known that persons who are the subjects of disease of the lungs in any marked degree are not likely to be found at work.

Very strong evidence of the beneficial effect of good exhaust ventilation in connection with all kinds of polishing operations, and indirectly of the lowered state of health from the nonremoval of the dust, was obtained at one factory. Here the opinion of the occupier was that the installation had paid for itself over and over again in the better work which was turned out by the men, and by the improved tone among them resulting from the absence of the obnoxious dust. The remarks of the polishers bore this out. One said, "Worked for eighteen years before the fan was put in, when the dust used to

make him feel sick, but it is not so now." A second said, "I prefer this shop to any other." A third, "I never worked in a cleaner shop;" and a fourth, "The fan is a great improvement."

A large amount of fluff, sand, and lime is given off in the process of polishing with calico mops. It is not, therefore, difficult to understand (even although actual injury to health from it may be hard to prove) that removal of the dust is welcomed as tending to make the work healthier. A sample of dust taken from under a polishing bob was submitted to Doctor Thorpe, who reported: "This sample contains a large proportion of fiber, the loss on ignition amounting to 37.6 per cent. The metallic portion of the residue—copper, zinc, lead, and iron—amounts to 10.56 per cent of the total sample. The lead present equals 0.22 per cent of the total sample, or 2.1 per cent of the above metallic constituents, or, excluding the iron, 2.33 per cent. Microscopically brass dust collected from near an emery wheel showed all the appearances of an injurious metallic dust—fine particles with irregular jagged edges."

Oliver concludes his observations regarding the hygiene of this employment with the following statement:

The necessity of personal cleanliness on the part of workmen and of well-ventilated workshops is apparent. Means ought to be provided for a ready escape of the fumes and for the removal of dust. The workshops ought to be cleaned at least once a year and the walls whitewashed. Hot and cold water should be provided for the men to wash in. The workmen themselves have found out by experience that milk is both a prophylactic or preventive as well as a curative agent. While the use of respirators seems called for, the men can not work well in them. Women and persons under 18 years of age are not allowed to work in the casting shop.

The most recent English mortality statistics of brass workers are for the three years ending with 1902, referred to in the report of the registrar-general in part, as follows:

The mortality of these workers is somewhat below the standard at ages 15 to 20 and 25 to 35 years, but above the standard at every other age group. In the main working period of life their comparative mortality figure is 1,154, or 15 per cent above the average; the greatest excess of mortality occurring under the head of phthisis, the figure for which disease is above the average by 45 per cent. The mortality from diseases of the nervous, circulatory, respiratory, and urinary systems as well as from suicide is also above the average. These workers are only slightly liable to fatal influenza, and their mortality from alcoholism and liver disease is also low. They likewise suffer less than the average from fatal accident. (*)

The English occupation mortality statistics for brass workers are quite conclusive of the more or less unfavorable effects of this industry on health. In the table which follows a comparison is made of

* Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxv.

the mortality from all causes of men in this group with occupied males generally, and the result is quite suggestive of conditions in this trade more or less unfavorable to life and health, but in particular at ages 35 to 64, when the general mortality of this class exceeds the general average by from 3.17 to 5.59 per 1,000.

MORTALITY FROM ALL CAUSES OF BRASS WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for brass workers.		
		Rate per 1,000.	Greater(+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.22	-0.22	91
20 to 24 years.....	4.41	5.13	+ .72	116
25 to 34 years.....	6.01	5.86	- .15	98
35 to 44 years.....	10.22	12.79	+2.57	125
45 to 54 years.....	17.73	20.90	+3.17	118
55 to 64 years.....	31.01	36.60	+5.59	118
65 years or over.....	88.39	83.78	-4.61	95

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of brass workers from consumption and respiratory diseases other than consumption is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that at ages 20 to 64, inclusive, the mortality of brass workers from consumption is excessive by from 0.42 to 1.79 per 1,000, the excess being greatest at ages 35 to 44. The table further shows that the mortality from respiratory diseases other than consumption is excessive among men in this class, but decidedly so at ages 55 and over, when the excess is from 1.29 to 2.88 per 1,000. The two tables derived from English experience fully confirm the previous conclusion that the mortality of brass workers is excessive when comparison is made with the normal mortality of occupied males generally, and that this excess is largely because of the high degree of consumption frequency, particularly at ages 25 to 54. The table which follows requires no further comment, and is otherwise self-explanatory.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG BRASS WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for brass workers.			Death rate per 1,000 for all occupied males.	Death rate for brass workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.40	-0.05	91	0.24	0.24	.....	100
20 to 24 years.....	1.55	2.17	+ .62	140	.48	.52	+0.04	108
25 to 34 years.....	2.03	2.93	+ .90	144	.77	.60	- .17	78
35 to 44 years.....	2.74	4.53	+1.79	165	1.66	2.05	+ .39	123
45 to 54 years.....	3.04	4.61	+1.57	152	3.32	3.94	+ .62	119
55 to 64 years.....	2.16	2.58	+ .42	119	6.54	9.42	+2.88	144
65 years or over....	1.11	.44	- .67	40	17.77	19.06	+1.29	107

The recorded mortality of brass workers in industrial insurance experience includes 414 deaths from all causes, of which 161, or 38.9 per cent, were from consumption. Of the mortality of brass workers from respiratory diseases, other than consumption, 36 were from pneumonia, 3 from asthma and bronchitis, and 12 from less frequent respiratory diseases. If the deaths from consumption and other respiratory diseases are combined, 51.2 per cent of the mortality of brass workers was from diseases of the lungs and air passages. The excess in the consumption mortality of brass workers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 15 to 24, when out of every 100 deaths from all causes 59.1 were from consumption, against a normal expected proportion of 27.8. The analysis of the consumption mortality of brass workers in detail is set forth in the following table.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG BRASS WORKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for brass workers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of brass workers. 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Brass workers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	66	30	59.1	27.8
25 to 34 years.....	112	56	50.0	31.3
35 to 44 years.....	91	41	45.1	23.6
45 to 54 years.....	58	14	24.1	15.0
55 to 64 years.....	54	11	20.4	8.1
65 years or over.....	33			2.7
Total.....	414	161	38.9	14.8

The preceding observations and statistical data fully confirm the conclusion that brass workers as a class are subject to decidedly health-injurious circumstances connected with the employment, and resulting in a comparatively high degree of consumption frequency and a death rate from respiratory diseases in excess of the normal at ages 35 or over.

PRINTERS.

The employment of printers differs in many essentials from most of the other occupations considered in this discussion, since it is homogeneous and well-defined and common throughout the country. While in many of the modern printing establishments the conditions favoring health and life, with special reference to ventilation and light, are probably satisfactory, in the smaller workshops the sanitary conditions, as a rule, are decidedly to the contrary, and predispose to tuberculosis. Thackrah early called attention to the diseases of printers, and in his opinion "few appear to enjoy good health." Consumption, according to this writer, was frequent, but apparently caused rather by the confinement or indoor employment than from direct injury to the respiratory organs. The trade is one which has received a considerable amount of attention because of its recognized unhygienic features, and, in addition to the general data upon this subject, the mortality experience of various typographic associations has been carefully investigated. As Oliver points out, "Printing houses should be so constructed that free currents of air can get to them, and not, as is so frequently the case, shut in by other buildings."

But such construction is even to-day the exception rather than the rule. Considering that, as a class, printers probably rank above the average mechanics in intelligence and earnings, it is difficult to un-

derstand why they should so persistently in the past have neglected the important problem of workshop hygiene. The successful effort to secure to the members of the craft in illness or old age a home in the mountain region of the West emphasizes what could be done by concentrated effort in other and even more important directions. In the historical sketch of the Union Printers' Home, at Colorado Springs, it is, in fact, pointed out that the place was selected for the location of the home primarily because of the special liability of printers to all forms of lung and throat diseases, and in explanation of the subsequent necessity for a hospital annex the statement is repeated that "consumption is one of the diseases to which the printer is especially liable."

The English vital statistics of printers for 1890 to 1892 are quite conclusive. Out of 2,677 deaths of printers from all causes, 917 were from phthisis, 218 from bronchitis, 186 from pneumonia, and 50 from other diseases of the respiratory system. In every 100 deaths from all causes there occurred, therefore, 51.2 deaths from diseases of the lungs and air passages. In comparing the mortality rates of printers with occupied males generally the health-injurious effects of the occupation, at even very early ages, become very readily apparent. At ages 15 to 19 the rate for occupied males generally was 2.55 against 3.24 for printers; at 20 to 24 the rates were, respectively, 5.07 and 6.61; at 25 to 34, 7.29 and 9.10; at 35 to 44, 12.43 and 14.40; at 45 to 54, 20.66 and 21.56; at 55 to 64, 36.66 and 43.39; and finally, at ages 65 or over, 102.32 and 102.61. This comparison proves conclusively that the excess in the mortality falls very largely upon ages under 35, and at these ages more than half of the mortality from all causes is from diseases of the lungs or air passages, or primarily from consumption.

Tatham, in commenting upon the excessive mortality of printers, as disclosed by an analysis of the English mortality data, remarks that "like bookbinders, printers die very rapidly from phthisis, and probably for a similar reason, namely, because of the excessively unhealthful conditions under which their work is carried on."(*) Tatham calls attention, however, to the decline in the mortality of printers during the course of the last twenty years, due among other causes to the decrease in the deaths from lead poisoning, which had fallen to one-half of the earlier figure. The frequency of phthisis among English printers had decreased during the decade by one-sixth of the former rate.

In the occupation mortality statistics of the Twelfth Census, printers are grouped with compositors and pressmen, which is to be regretted since there are certain important differences in the disease liability of

* *Dangerous Trades*, p. 151.

these allied employments which are sufficiently distinct to warrant separate consideration, at least in the case of pressmen, although the number of the latter is comparatively small. The total number of persons included in this group in the registration States, aged 15 or over, according to the census, was 54,374, but of this number only 818, or 1.5 per cent, had attained to the age of 65 or over. (*) This rather surprising result is confirmed by the statistics of the New Jersey bureau of labor for 1891, according to which out of 462 printers only 2 had attained to the age of 60 or over. The census mortality statistics of this group of printers, or as stated, compositors, printers, and pressmen, are of some value though not entirely conclusive on account of probable defects in the census enumeration.

MORTALITY FROM ALL CAUSES AMONG COMPOSITORS, PRINTERS, AND PRESSMEN, COMPARED WITH THAT OF THE MANUFACTURING AND MECHANICAL CLASS AND THE MERCANTILE AND TRADING CLASS IN THE REGISTRATION STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Age at death.	Death rate per 1,000 among—		
	Compositors, printers, and pressmen.	The manufacturing and mechanical class.	The mercantile and trading class.
15 to 24 years.....	5.05	4.43	2.60
25 to 44 years.....	12.29	8.35	6.72
45 to 64 years.....	20.01	20.16	19.91
65 years or over.....	108.80	105.43	93.79

According to this table the death rate of printers at ages 15 to 24 was 5.05 per 1,000, compared with 4.43 for men in the mechanical and manufacturing class, and only 2.60 for the mercantile and trading class. At ages 25 to 44 the rate was 12.29 for printers, but only 8.35 and 6.72, respectively, for the other two selected groups of occupations. At ages 45 or over the differences in the mortality of printers compared with other occupations were very slight, due in all probability to the fact that on the one hand most of those at all liable to consumption had died, and that on the other many of the impaired in health had left the trade. In addition, there is also the factor of a possible defect in the census enumeration.

Every investigation which has been made into the mortality rate of printers has confirmed these startling facts of health-injurious circumstances apparently inherent in the trade. In Rhode Island, out of 81 deaths of printers recorded during the ten-year period ending with 1906, 21, or 25.9 per cent, were from consumption and 15, or 18.5 per cent, from other respiratory diseases. At the forty-sixth session of the International Typographical Union, held at Milwaukee, Wis., in 1900, a statistical summary was submitted showing that out of 419 deaths of printers, 192, or 45.8 per cent, had been deaths from

* Report of the Bureau of the Census on Vital Statistics, 1900, p. cclxxxii.

diseases of the lungs or air passages, including under this term bronchitis, asthma, pulmonary consumption, pneumonia, and all other respiratory diseases. Of the 411 printers whose ages at death were known, 44, or 10.7 per cent, died at the age of 65 or over, while the average age at death was only 41.25 years, compared with 52.2 years for all males aged 15 or over in the registration area of the United States in 1900.

A thorough and extended investigation into the sanitary conditions of the printing trade was published as part of the report of the New York state bureau of labor statistics in 1906, prepared by Mr. George A. Stevens, statistician. This investigation included the entire mortality of the International Typographical Union for the five years ending with 1905, or 2,498 deaths, representing a mean death rate of 12.63 per 1,000. The rate was highest among the printers of New York City, or 16.32 per 1,000, and lowest in Chicago, or 10.12 per 1,000. The average age at death for all printers was not quite 45 years. The disease most frequent and severe among compositors was found to be tuberculosis of the lungs. The average age at death of compositors dying from tuberculosis was only 36.33 years. Out of 2,498 deaths from all causes, 660, or 26.4 per cent, were from tuberculosis, equivalent to an annual mean death rate of 3.34 per 1,000. Pneumonia caused 258 deaths, or 10.3 per cent of the deaths from all causes, equivalent to an annual mean death rate of 1.30 per 1,000. In commenting upon the high degree of consumption frequency the report points out that "scarcely any other occupation furnishes so large a quota of victims from consumption. The domestic life of printers is parallel to that of other artisans in equal financial circumstances. They are fairly compensated for their labor, thus enabling them to have homes as healthful as those procured by the best-paid workmen in any community. Neither can it be said that compositors are ill nourished and therefore rendered more susceptible to the tubercle bacilli. The determining cause of their susceptibility to the harmful process of the great white plague lies in a different direction—neglect of sanitary precautions in composing rooms."(*)

Of the mortality at known ages, from all causes, 18.9 per cent were deaths at 60 years of age or over. Of the 464 deaths in this group, 321 occurred between the ages of 60 and 69, 122 between 70 and 79, 19 between 80 and 89, 1 at age 90, and 1 at age 96.

The statistical data of the mortality rate among printers for the United States are fully confirmed by the corresponding statistics for German printers, which were published in a small treatise on the hygiene of the printing trade by Doctor Lewitt, of Berlin, in 1899. According to this authority, out of 1,390 recorded deaths of printers,

* Report of the New York Bureau of Labor Statistics, 1906, pp. cxxi and cxxii.

798, or nearly 61 per cent, were of diseases of the lungs and air passages, including 630 deaths from consumption. Of the total number, 243 had attained to the age of 60 or over, or 17.5 per cent of the mortality at known ages. The suggestions made by this writer regarding the prevention of tuberculosis and other diseases in the printing trade are eminently practical and feasible in most of the workshops in which printers are employed.

The most recent English mortality statistics of printers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

The death rates of printers were above the standard for occupied and retired males at all ages up to 35 years, but above that age they were below the standard. Within the main working period of life the comparative mortality figure of printers is 994, which practically corresponds to the standard; they show a slightly excessive mortality from influenza, nervous diseases, and Bright's disease; and their mortality from phthisis exceeds the standard by 60 per cent. On the other hand their mortality from circulatory and respiratory diseases is considerably below the average, and they appear to be subject to small risk from fatal accident, and to be but little addicted to alcoholism and suicide.

Since 1880-1882 there has been a continuous decline in mortality from phthisis, liver disease, and accident. It is also worthy of notice that the mortality from lead poisoning is now only one-fifth part as high as it was twenty years ago. From the other causes shown in the table the mortality in this occupation has fluctuated considerably.

The English occupation mortality statistics for printers are quite conclusive of the unfavorable effects of this occupation on health. In the table which follows the mortality from all causes among men in this employment is compared with that of occupied males generally, and the result is decidedly suggestive of conditions in this trade more or less unfavorable to life and health but in particular at the early ages, or 15 to 34, when the excess in mortality is from 1.62 to 0.45 per 1,000. This table is deserving of particular consideration in that it emphasizes the health-destructive circumstances of this employment at a very early period of life. Those who survive to age 35 or over do not apparently experience a decidedly unfavorable mortality in comparison with other occupations, and in this respect the English statistics are confirmed by the United States census statistics previously quoted. While the actual excess in the mortality of printers at ages 20 to 24 is only 1.62 per 1,000, this excess is equivalent to nearly 50 per cent of the normal mortality at this period of life.

MORTALITY FROM ALL CAUSES AMONG PRINTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902. BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for printers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	3.19	+0.75	131
20 to 24 years.....	4.41	6.03	+1.62	137
25 to 34 years.....	6.01	6.46	+ .45	107
35 to 44 years.....	10.22	10.19	- .03	100
45 to 54 years.....	17.73	17.76	+ .03	100
55 to 64 years.....	31.01	30.76	- .25	99
65 years or over.....	88.30	87.61	- .78	99

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of printers from consumption and other diseases of the respiratory system is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that at all ages the mortality of printers from consumption is excessive by from 0.49 to 2.11 per 1,000. The excess is most marked at ages 35 to 44, but the difference is a material one at all ages 20 to 64 inclusive. The corresponding mortality from other respiratory diseases among printers was slightly excessive at ages under 20 and comparatively high at ages 65 or over, but below the average at ages 20 to 64, inclusive. Apparently the employment does not predispose seriously to respiratory diseases except such as assume the pulmonary form of true consumption of a rapidly developing type most destructive to young printers at ages under 45. The table which follows requires no further comment and is otherwise self-explanatory.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG PRINTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			Mortality from other diseases of the respiratory system.		
	Death rate per 1,000 for all occupied males.	Death rate for printers.		Death rate per 1,000 for all occupied males.	Death rate for printers.	
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.
15 to 19 years.....	0.54	1.03	+0.49	191	0.24	+0.12
20 to 24 years.....	1.55	3.41	+1.86	220	.48	- .11
25 to 34 years.....	2.03	3.65	+1.62	180	.77	- .22
35 to 44 years.....	2.74	4.85	+2.11	177	1.66	- .42
45 to 54 years.....	3.04	4.27	+1.23	140	3.23	-1.15
55 to 64 years.....	2.16	3.42	+1.26	158	6.54	-1.38
65 years or over....	1.11	1.60	+ .49	144	17.77	+2.90

The recorded mortality of printers in industrial insurance experience was exceptionally large and representative of the trade, including 1,590 deaths from all causes, of which 613, or 38.6 per cent, were from consumption. Of the mortality of printers from other respiratory diseases, 169 were from pneumonia, 28 from asthma and bronchitis, and 24 from less frequent respiratory diseases. If the deaths from consumption and other respiratory diseases are combined, 52.5 per cent of the mortality of printers was from diseases of the lungs and air passages. The excess in the consumption mortality of printers is decidedly suggestive of a typical indoor employment, where the exposure to the inhalation of metallic dust in minute particles is continuous and more or less unavoidable. While the consumption mortality of printers was excessive at all ages, the excess was most pronounced at 25 to 34, when out of every 100 deaths from all causes 56.3 were from consumption against a normal expected proportion of 31.3. The analysis of the consumption mortality of printers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG PRINTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for printers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of printers, 1897 to 1906, due to—		Percent of deaths due to consumption among—	
	All causes.	Consumption.	Printers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	344	167	48.5	27.8
25 to 34 years.....	429	247	56.3	31.3
35 to 44 years.....	346	140	40.5	23.6
45 to 54 years.....	211	42	19.9	15.0
55 to 64 years.....	142	13	9.2	8.1
65 years or over.....	108	4	3.7	2.7
Total.....	1,590	613	38.6	14.8

The preceding observations and statistical data, derived from both American and foreign sources, fully confirm the conclusions that the printing trade is subject to decidedly unfavorable circumstances more or less responsible for the comparatively high degree of consumption frequency disclosed by both the general vital statistics of the occupation and the observed mortality of this class of labor in industrial insurance experience.

COMPOSITORS.

Compositors, considered as a distinct occupation (for most printers are also compositors), are exposed to practically the same health-injurious conditions as are persons engaged in the other occupations

of the printing business, and in addition they suffer from eye strain, which may, under given conditions, affect very seriously the disease-resisting capacity of the system. Stereotyping might have been included here, and its enormous development as a separate branch of the printing trade would warrant special consideration if any really authenticated observations had been made a matter of record useful for the present purpose. In stereotyping the liability to lead poisoning is a serious factor, affecting especially the men employed in melting the alloy and ladling it into the forms. The same observation applies to operatives on linotype machines, but our present information regarding these employments is too indefinite to warrant the conclusion that the exposure to the risk of plumbism increases materially the mortality from tubercular and respiratory diseases. There are no general vital statistics of compositors separate from those of printers and pressmen, since in both American and foreign statistics these employments are considered as a group.

In the occupation mortality statistics of Rhode Island out of 12 deaths from all causes of compositors recorded during the ten years ending with 1906, 3, or 25 per cent, were from consumption and 2 from other respiratory diseases, or a total of 41.7 per cent of the deaths of compositors were from diseases of the lungs and air passages.

There may be included in this brief reference an extract from a letter by Mr. J. W. Sullivan, a New York City printer, in the *Typographical Journal* for November, 1903, and reprinted in the annual report of the New York bureau of labor statistics for 1906, in part as follows:

Typesetting is exhaustive work. Standing hour by hour brings on backache, and in some men varicose veins and swollen feet. Sitting on the high printing-office stools doubles the typesetter up, constraining his arm motions and interfering with his digestion. The linotype operator's stool is too low, as it throws his legs into cramped positions. From the pot of molten type metal under his machine comes a trying heat and offensive gases. He must watch the delicate machinery lest it go wrong. The electric light thrown on his copy often sharply conflicts with the daylight. His keyboard work with wrist and fingers and his handling of hot slugs sometimes results in numbness that threatens scrivener's palsy. Whether typesetter or linotype operator, the compositor's brain is active every moment during the workday. Composition can never be wholly mechanical. Attention must be given to deciphering the copy, to spelling, to capitalizing, punctuating, office style, and correcting the lines as composed. Each of these distinct mental acts, on the whole tedious and monotonous, helps to drain the bodily forces. As the brain becomes fatigued its cells shrink. With every type a man sets there is a touch of wear on the cerebral tissue itself, only to be repaired by the restorative operations of nature—through food, rest, and sleep.

The recorded mortality of compositors in industrial insurance experience affords an opportunity to separately consider this employ-

ment as distinct from that of printers. The mortality from all causes was 168, of which 59, or 35.1 per cent, were from consumption. Of the mortality of compositors from other respiratory diseases, 19 were from pneumonia, 1 from asthma, and 5 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 50 per cent of the mortality of compositors was from diseases of the lungs and air passages. The excess in the consumption mortality of compositors is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages under 55, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 66.7 were from consumption, against a normal expected proportion of 31.3. While at this period of life the proportionate consumption mortality of compositors was higher than the corresponding mortality of all printers, the proportions were somewhat less at other divisional periods of life, and at ages 55 and over the numbers were too small for a safe conclusion. The analysis of the consumption mortality of compositors in detail is set forth in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG COMPOSITORS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for compositors from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of compositors, 1897 to 1906, due to—		Percent of deaths due to consumption among—	
	All causes.	Consumption.	Compositors.	Males in registration area, 1900 to 1906.
15 to 24 years.....	21	6	28.6	27.8
25 to 34 years.....	54	36	66.7	31.3
35 to 44 years.....	32	12	37.5	23.6
45 to 54 years.....	19	3	15.8	15.0
55 to 64 years.....	33	1	3.0	8.1
65 years or over.....	9	1	11.1	2.7
Total.....	168	59	35.1	14.8

The preceding observations and statistical data, derived from industrial insurance experience, confirm the conclusion that compositors as a class are exceptionally liable to diseases of the lungs, and that the degree of consumption frequency is decidedly excessive and apparently more so than in the printing trade as a whole.

PRESSMEN.

Pressmen in printing plants may be separately considered, although the information regarding this occupation is rather fragmentary and inconclusive. Arlidge comments on the hygienic aspects of the employment in part as follows:

Their old mode of working has been superseded by the wonderful development of the modern printing machine, whereby the pressman has become little else than an attendant upon it; and we see the marvelous machine in newspaper offices strike off, fold, and count the sheets by thousands in an hour. Bodily strength is consequently at a discount, and the disadvantages of the occupation limited to the heat of the press room—caused principally by the heated cylinders of the press, and to a greater or smaller extent, where coal gas and not electricity is used for lighting, by the gas jets. Add to these the noise of the machines, the standing posture, and confinement in the press room and sustained attention to their work, and there remains nothing else calculated to injure the pressman's health, barring circumstances within his own control.

The occupation of pressmen does not appear to have attracted the special attention of American writers on occupation mortality, but it is safe to assume that the disease liability of this class, and in particular the degree of consumption frequency, do not materially differ from the observed mortality of men employed in the printing trade generally. More definite data, however, would supply a much to be desired addition to our at present very limited knowledge regarding the specific occupation mortality of this employment.

ENGRAVERS.

Engravers are not a very numerous, but a widely distributed, class of workmen, whose occupation is sufficiently well defined to warrant separate consideration. According to the census of 1900 there were 11,156 engravers in the United States. Engravers upon copper, steel, or other metals are subject to much the same conditions injuriously affecting health and life, and the differentiation of the employment according to the kind of metal worked upon is not practicable.

The employment decidedly predisposes to consumption, and all the available data indicate an excessive proportion of deaths from this disease among engravers, at least during the active working period of life. Aside from health-injurious factors directly resulting from operations and processes inseparable from the employment, there is also the unfavorable effect of a sedentary occupation demanding a fixed and stooping position. Arlidge has called attention to the fact that there are other accessory conditions unfavorable to health in this employment, such as the frequent use of strong light, severe taxing of the eyes,^a and the employment of strong acids.

^a For an extended discussion of the cause of eye strain see *Biographic Clinica*, Vol. IV, by George M. Gould, M. D., Philadelphia, 1906, pp. 61 et seq.; also *Popular Science Monthly* for December, 1906.

Some fairly conclusive data are available regarding the mortality of engravers, with particular reference to consumption, but as an interesting case of extreme longevity mention may be made of the death of a Mr. Charles Harris at the age of 93, who for more than half a century had been an engraver of the American Bank Note Company. A somewhat similar case was the death of a Mr. James P. Mayer, who, at his death at the age of 83, was considered the oldest American steel engraver on record.

These, however, are but illustrations of exceptions and rather mark the rule of the comparative infrequency of extreme longevity among men in this employment. Thackrah held that "engravers and copperplate printers present few examples of old age," but he may have included printers and lithographers and similar employments under this term. Tracy, writing with reference to more recent and American conditions, holds that engravers, in common with lapidaries and watchmakers, are very liable to phthisis. It is probably quite true, as pointed out by Sommerfeld, that the amount of metallic or mineral dust generated in this occupation is comparatively small in quantity, but it is practically certain to be injurious in its effects just because of the minuteness of the particles. According to Sommerfeld's data, 23.6 per cent of all cases of sickness of engravers were diseases of the lungs and air passages. He suggests, among other points, as a precaution, extreme care in the physical selection of engravers' apprentices to eliminate those already predisposed to consumption. He further suggests the proper ventilation of the workshops, which in most cases is almost entirely neglected. The evidence of such neglect is brought out by the consumption mortality data of this employment for the State of Rhode Island, according to which, out of 142 deaths of engravers recorded during the half century ending with 1902, 45, or 31.7 per cent, were from consumption, against a normal mortality from this disease among men in all occupations in Rhode Island of 17.8 per cent.

The recorded industrial insurance mortality experience of engravers includes 192 deaths from all causes, of which 67, or 34.9 per cent, were deaths from consumption. Of the mortality of engravers from other respiratory diseases, 18 were from pneumonia, 1 from asthma, and 3 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 46.4 per cent of the mortality of engravers was from diseases of the lungs and air passages. The excess in the consumption mortality of engravers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at 25 to 34, when out of every 100 deaths

from all causes 61.7 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of engravers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG ENGRAVERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for engravers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of engravers, 1897 to 1906, due to—		Per cent of deaths due to consumption, among—	
	All causes.	Consumption.	Engravers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	31	12	38.7	27.8
25 to 34 years.....	47	29	61.7	31.3
35 to 44 years.....	42	19	45.2	23.6
45 to 54 years.....	34	5	14.7	15.0
55 to 64 years.....	19	2	10.5	8.1
65 years or over.....	19	.....	.....	2.7
Total.....	192	67	34.9	14.8

The preceding observations and statistical data, derived from industrial insurance experience, would seem to warrant the conclusion that engravers are subject to more or less unfavorable effects of their employment, resulting in a decidedly high degree of consumption frequency at early ages, but in particular at ages 15 to 44.

SUMMARY OF CONCLUSIONS REGARDING OCCUPATIONS WITH EXPOSURE TO METALLIC DUST.

Ten occupations exposed to metallic dust have been considered in detail. It is not possible in all cases to base conclusions upon identical data, since for a number of occupations no official vital statistics are available. As a method of indicating with approximate accuracy the possible effect of health-injurious employment, use may, however, be made of the statistics exhibiting the age distribution of persons in this group, and when the employments for which the data are available are combined the number of such persons under observation in the last census year was 219,579. Of this number only 3,544, or 1.6 per cent, had attained to an age of 65 years or over, against a normal expected proportion of 4.6 per cent. While it is quite probable that, to a certain extent, this small number of persons of advanced age in occupations exposing to metallic dust is the result of occupation selection, or conditions favorable to the employment of young persons, the result is, nevertheless, decidedly suggestive of conditions more or less unfavorable to health and life. The details of the age distribution

are given in the following table, by divisional periods of life, together with the corresponding percentage distribution of all occupied males, the data for both groups being derived from the census of 1900.

NUMBER AND PER CENT OF MALES IN EACH AGE GROUP IN OCCUPATIONS EXPOSED TO METALLIC DUST, COMPARED WITH NUMBER AND PER CENT IN ALL OCCUPATIONS, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Males in occupations exposed to metallic dust.		All occupied males.	
	Number.	Per cent.	Number.	Per cent.
15 to 24 years.....	75,663	34.4	5,933,720	26.0
25 to 34 years.....	69,998	31.9	5,993,847	26.2
35 to 44 years.....	41,246	18.8	4,704,682	20.6
45 to 54 years.....	19,711	9.0	3,250,239	14.2
55 to 64 years.....	9,407	4.3	1,856,181	8.1
65 years or over.....	3,554	1.6	1,063,856	4.7
Total.....	219,579	100.0	22,802,545	100.0

According to this analysis the proportion of males aged 15 to 34 was unusually large in this group of occupations, or 66.3 per cent, against 52.3 per cent expected. At ages 35 to 44 the proportion was 18.8 per cent for the group under consideration, against 20.6 per cent among occupied males generally, while at ages 45 or over the percentage proportion of males employed in occupations with exposure to metallic dust was only 14.9 per cent, against 27.1 per cent for occupied males generally. Since most of the trades considered do not involve a very considerable amount of muscular labor, it would seem safe to assume that the unfavorable age distribution is the result of a high death rate, rather than because of occupation selection, more or less favorable to the employment of persons below the age of 35 years.

It is unfortunately not possible to present a combined summary of the census vital statistics of males employed in the occupations included in this group, since it is only for printers and compositors that the census data have been made public. If, however, the mortality statistics for printers and compositors are compared with the corresponding statistics for all occupied males, the death rates are above the average and decidedly so at ages 25 to 44. The death rate from consumption was 4.36 per 1,000, against 2.37 for all occupations, while the death rate from other respiratory diseases was slightly below the average, or 1.54 against 1.97 expected.

The occupation mortality statistics of Rhode Island are available for 8 specific occupations with exposure to metallic dust and when combined return 791 deaths from all causes, of which 229 were from consumption and 99 from other respiratory diseases. The corresponding percentages were 29 per cent of deaths from consumption for

persons employed in occupations with exposure to metallic dust, against 17.8 per cent for occupied males generally in the State of Rhode Island. The percentage of deaths from other respiratory diseases was 12.5 per cent, which was exactly the same as for all occupied males in Rhode Island.

The English vital statistics for this group of occupations are available for tool and instrument makers, brass workers, and printers and compositors. When the returns for these occupations are combined, they exhibit excessive death rates at every period of life, as set forth in tabular form, as follows:

MORTALITY FROM ALL CAUSES, FROM CONSUMPTION, AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM, IN OCCUPATIONS EXPOSED TO METALLIC DUST, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 due to all causes among—		Death rate per 1,000 due to consumption among—		Death rate per 1,000 due to other diseases of the respiratory system.	
	All occupied males.	Occupations exposed to metallic dust.	All occupied males.	Occupations exposed to metallic dust.	All occupied males.	Occupations exposed to metallic dust.
15 to 19 years.....	2.44	2.73	0.54	0.73	0.24	0.30
20 to 24 years.....	4.41	5.28	1.55	2.73	.48	.45
25 to 34 years.....	6.01	6.29	2.03	3.33	.77	.69
35 to 44 years.....	10.22	11.68	2.74	5.05	1.66	1.62
45 to 54 years.....	17.73	20.97	3.04	5.29	3.32	3.55
55 to 64 years.....	31.01	36.03	2.16	3.91	6.54	7.94
65 years or over...	88.39	92.52	1.11	1.54	17.77	22.46

The table shows that the mortality from consumption among men in occupations with exposure to metallic dust was decidedly excessive at all ages and extremely high throughout life, while the corresponding mortality rate from respiratory diseases other than consumption was fairly normal and slightly below the average at ages 20 to 44.

The industrial insurance mortality statistics are available for nine occupations included in this group, returning in the aggregate 3,502 deaths from all causes, and of this number 1,292, or 36.9 per cent, were from consumption. The deaths from other respiratory diseases numbered 469, or 13.4 per cent. The expected consumption percentage by the standard adopted for the registration area of the United States was 14.8 per cent for consumption and 11.7 per cent for other respiratory diseases. When the mortality from consumption and from respiratory diseases other than consumption are combined, the proportionate number of deaths among men in occupations with exposure to metallic dust is found to be 50.3 per cent from this group of causes, against 26.5 per cent expected.

PROPORTIONATE MORTALITY FROM CONSUMPTION IN OCCUPATIONS EXPOSED TO METALLIC DUST, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for occupations exposed to metallic dust from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths in occupations exposed to metallic dust, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Occupations exposed to metallic dust.	Males in registration area, 1900 to 1906.
15 to 24 years.....	619	288	46.5	27.8
25 to 34 years.....	892	510	57.2	31.3
35 to 44 years.....	730	313	42.4	23.6
45 to 54 years.....	518	121	23.4	15.0
55 to 64 years.....	308	47	11.8	8.1
65 years or over.....	336	13	3.9	2.7
Total.....	3,502	1,292	36.9	14.8

* There were also 469 deaths from other diseases of the respiratory system, or 13.4 per cent of the deaths from all causes.

* The per cent of deaths from other diseases of the respiratory system in the registration area was 11.7.

It is evident from the foregoing observations and statistical data relating to a sufficient number of representative employments with exposure to metallic dust, that the health-injurious effects of such exposure are reflected in the comparatively small proportion of persons of advanced years, a high general death rate, and very high specific death rates from consumption and other respiratory diseases.

OCCUPATIONS WITH EXPOSURE TO MINERAL DUST.

In the group of occupations exposing to a continuous and considerable inhalation of mineral dust resulting from industrial processes, have been included for the present purpose the following representative employments: Stone workers, marble workers, glass blowers, glass cutters, diamond cutters, potters, cement workers, plasterers, paper hangers, molders, core makers, and lithographers. These occupations are all more or less subject to an excessive death rate from all causes, but in particular to a decided excess in the proportionate mortality from consumption, and in most cases also to a comparatively high degree of frequency in the occurrence of respiratory diseases. The details of labor conditions as far as they could be conveniently included in the following summary of observations regarding particular trades appear to fully confirm the opinion that the degree of excess in consumption frequency is intimately related and in almost exact proportion to the degree of exposure to continuous and considerable inhalation of mineral dust.

THE STONE INDUSTRY.

The stone industry in the United States is of considerable extent and wide dispersion over practically the entire country. The number of males of known ages 15 or over employed as stone and marble cutters in the United States in 1900, according to the census, was 54,039, but it is quite probable that this total does not include stone polishers, sawyers, and other similar occupations peculiar to the stone industry. The health of stone and marble cutters has, from earliest times, been held to be notoriously bad, and the hygienic importance of this trade was recognized by Ramazzini, who, as far back as 1705, discussed the subject in an entire chapter in his work on occupation mortality, stating that "in hewing marble or stones out of the rock, in polishing and cutting them, they oftentimes suck in, by inspiration, the sharp, rough, and cornered small splinters or particles that fly off; so that they are usually troubled with a cough, and some of them turn asthmatic and consumptive. * * * Our medical histories give many instances of stones found in the stomach and lungs of these workmen, for which we can assign no other material cause but the dusty particles taken in at the mouth and gradually gathered into a heap. * * * Withal, all possible caution must be used to avoid the sucking in of these minute particles at the mouth."

From the earliest to the most recent observers upon the health conditions in this trade, the conclusions have been decidedly unfavorable and suggestive of circumstances more or less possible of material improvement. Oliver, in his treatise on Diseases of Occupation, remarks, with special reference to stone masons:

The occupation of the stone mason and of the quarryman has for long been regarded as one in which a higher death rate from lung disease occurs than in most occupations. The disease, which usually assumes a chronic character, is slow in its development and progress. As it is attended by the ordinary physical signs and symptoms observed in other forms of pneumokoniosis, the malady calls for no special description other than this, that in contradistinction to miners' phthisis, which occurs in men who work underground, stone masons' phthisis is met with in men who are working in the open air, a circumstance which becomes a strong argument in favor of the dust origin of pneumokonioses as against the bacillary. After a time the lung disease becomes tuberculous, hence the extraordinary fact of the death rate from pulmonary tuberculosis among stone masons and marble cutters, who are following an outdoor occupation, being six times that of bankers and brokers, who are leading an indoor life. This want of harmony between occupation and mortality from pulmonary phthisis is observed in other outdoor occupations than stone-cutting. It would appear, therefore, as if the predisposing causes of lung disease are often of greater importance than the exciting—in other words, that the soil is of as much, if not of greater, influence than the seed. The irritation of the lung caused by dust would seem

in some instances, especially in the early stages of the disease, to create a favorable soil for the implantation of the tubercle bacillus, while in the slowly developed forms of pneumokoniosis the hard and unyielding fibrous tissue does not offer the same attractions to the micro-organism, and as a consequence it is in those parts of the lung where the structure is least fibrous that the tubercle bacilli exert their greatest power for harm.^(a)

The remarks of Oliver are fully sustained by the available statistical evidence. The secretary of the Operative Masons' Society of London, in his testimony before the committee on industrial diseases, produced the mortality record for Newcastle for the period 1871 to 1896, including an account of 160 deaths of stone masons, and of this number 71, or 44.4 per cent, had died from phthisis, at an average age of only 42.23 years. It was admitted, however, that conditions had improved, and more recent data resulted in a more favorable showing. Out of 253 deaths of stone masons reported in 1905 by the same society, 79, or 31.2 per cent, were deaths from consumption. The same witness stated that the average age at death of those dying from phthisis during 1905 was 44 years, against 51 years for deaths from all causes.^(b)

Conditions are probably somewhat different in this country, due to the more general use of pneumatic tools, which generate considerable quantities of fine dust, the complete prevention of which is always difficult and often is impossible. The degree of disease liability varies materially according to the specific occupation, and the risk is less in the case of paving-stone cutters and slate splitters than in the case of monument or custom work, which requires close attention in matters of minute detail and which is more often carried on indoors. Surfacing and carving and cutting with pneumatic tools are the most dangerous employments, and the risk is less in polishing, grinding, sawing, and lathe work, most of which is carried on by the wet process. Large quantities of dust are stirred up, however, in the brushing off and cleaning up of the accumulated dust, and in the moving of materials, dropping of slabs, etc. There is, therefore, more or less dust exposure in all branches of the stone industry, but the results of exposure vary according to the kind of material, which includes a large variety of stones, chiefly, however, granite, marble, limestone, sandstone, bluestone, slate, etc.

The stonecutter's trade is one which requires both skill and arduous physical labor. The men as a rule work in the open air, and in very warm or wet weather under shelter; but all are liable to inhale the dust and small particles from the material upon which they operate. This on some kinds of stone is much more deleterious to health than

^a Diseases of Occupation, London, 1908, p. 305.

^b Minutes of Evidence, Departmental Committee on Compensation for Industrial Diseases, p. 322.

on others, the stone containing the largest proportion of flints being much more injurious than that which has most lime in it. The returns show that the present age of stonecutters is three years less than that of carpenters or masons, while the average number of years at work exceeds that of either by nearly one year. But this is accounted for by reason of the difference in the ages at which they began to work, which by 63.9 per cent of stonecutters was under 15 years of age; while in the other two trades mentioned it was 13.8 per cent and 4 per cent, respectively. The explanation is that in England, Ireland, and Scotland, as well as in other European countries, seven years are the rule for apprenticeship of stonecutters, and a large proportion are taken when 12 years old, and quite a number under this age. Eighty-three and one-half per cent of the total number were foreign born and but 16.5 per cent American born; and of the latter but nine-tenths of 1 per cent began to work under 15 years of age; while 15.4 per cent of carpenters and 25.6 per cent of masons began to work at their respective trades after the age of 20 years and upward, none of the stonecutters had reached this age. This fully accounts for the differences above noted. (*)

In his discussion of the hygiene of this occupation Lloyd makes the following observations:

Stonecutters and quarrymen suffer in various degrees from the inhalation of dust. The extent of the evil in their cases depends upon, first, the character of the dust and, second, the circumstances amid which the work is pursued. The quality of the stone has much to do with the extent of pulmonary disease among stonecutters. Some stone is much more dusty than others. A sedimentary stone, for instance, that was formed originally simply by the deposit of earthy and siliceous particles under water is much more liable to give off a large quantity of dust than is a stone that was fused in early geological ages—the igneous stones, for instance, like granite. Although the particles from these latter stones are exceedingly hard, yet there is not much true dust, only the particles actually displaced by the contact with the tool being thrown off. These probably do not carry far in the air, and are mostly too large to gain access to the alveoli as dust. This was the explanation given by Hamilton, of Aberdeen (quoted by Arlidge), for the fact that the masons and polishers at the Aberdeen quarries do not suffer much, if any, with industrial phthisis.

A brief abstract from a special report of the Massachusetts state board of health on dangerous occupations, as suggestive evidence particularly applicable to American conditions at the present time, is also included here:

It is preeminently a dusty trade, and the workmen are, therefore, exposed to the danger of inhaling nonabsorbable and irritating particles of mineral matter. Accidents to the eyes from flying chips are also very common, but they are generally less serious than those due to fragments of steel from the tools employed. Of the various kinds of stone dust, granite is regarded as more injurious than marble, and

* Fourteenth Annual Report of the Bureau of Statistics of Labor and Industries of New Jersey, 1891, pp. 176, 177.

soapstone the least of all; but different granites vary in this particular, some yielding a much finer dust than others, on account of differences in texture. The greatest amount of dust comes from the surfacing machines, which are operated with compressed air. The tool is either a large hammer or an instrument which presents four smaller separate faces. Sometimes a bushing hammer, made of thin, chisel-like blades bolted together, is used; this creates the finest dust of all. The men who operate the surfacing tools rarely wear masks, but many chew tobacco and spit, in the belief that the practice serves to protect them from the effects of the dust to which they are exposed. Some protect themselves from flying chips by means of wire screens placed about the hammer; some wear wire masks and some wear glasses. By a union regulation, surfacing is done in the open sheds in the yard. While the operation of smoothing can not be done by the wet process, on account of clogging of the tools with the pasty material which would thereby be produced, polishing is conducted with the application of water, which prevents the evolution of dust. The sawing of granite and marble into slabs is conducted ordinarily by the wet process, and is therefore unattended by dust; but soapstone sawing and cutting for joints is frequently done dry, and with the evolution of much fine dust. Turning in lathes is conducted in the wet way, and is dustless.

Of 343 deaths which occurred in the city of Quincy among stonecutters during a period of about sixteen years, no fewer than 142 (41.4 per cent) were due to pulmonary tuberculosis, 41 (12 per cent) to other diseases of the lungs, 44 (12.8 per cent) to diseases of the heart, 24 (7 per cent) to violence, and 92 (26.8 per cent) to all other causes. Excluding accidents, the percentage due to tuberculosis was 44.5. These statistics show even more strikingly than those quoted in a report submitted two years ago the dangerous character of this occupation. Therein it appears that, of a total of 30,000 deaths among stonecutters, tuberculosis was the cause in 28.57 per cent. It must be said, however, that the average age at death of the victims of the disease in this industry, so far at least as the Quincy records show, is somewhat high (47.8 years), but it is to be borne in mind that the calling is one which is not open to the naturally weak, and that many of those who become incapacitated through infection drift into other lines of industry in which physical strength is not so essential, and hence at death are not returned as belonging to this class.

STONEWORKERS.

No very satisfactory data for this country are available to determine with accuracy the probable degree of difference in the health-injurious conditions resulting from the cutting or manipulation otherwise of the different kinds of stone, such as granite, sandstone, limestone, bluestone, slate, etc., except marble-cutters, to be separately considered as a well-defined branch of the trade. The term stonecutter is, therefore, practically inclusive of all branches of the industry and of all the different employments necessary in connection therewith. An observer of conditions in the sandstone industry states that "stonecutters who work on sandstone seldom live to be 50 years

of age, and nearly all of them die of lung disease due to the inhalation of mineral dust;” but how far this is sustained by actual experience in the regions where sandstone is quarried and cut can not be stated at present. A physician of long residence in the New Bedford, Ind., limestone field, states that he has not observed very serious consequences to result from employment in that branch of the stone industry, but all such observations are subject to serious error in the absence of trustworthy statistical data for a period of years.

The Vermont state board of health has reported the mortality by occupations during the six years ending with 1905, and during that time there were 204 deaths from all causes among the granite and stone cutters and workers in that State. Of those deaths 80, or 39.2 per cent, were from consumption, and 27, or 13.2 per cent, from other respiratory diseases. Of the deaths from all causes among granite and stone cutters and workers in Vermont, 52.4 per cent was due either to consumption or to other respiratory diseases.

In the State of Rhode Island during the period 1897-1906, 125 deaths of stone and marble cutters and workers were recorded, and of this number 40, or 32 per cent, were from consumption, compared with the average of 17.7 per cent for men in all occupations in that State. The census mortality statistics for 1900 combine marble and stone cutters into one group, including 26,141 males aged 15 years or over in the registration States. Of the number stated, 659, or 2.5 per cent, had attained to 65 years of age or over, which compares with 3.9 per cent for men in mechanical and manufacturing industries generally. In the mortality from all causes the death rate was comparatively low at ages under 25, but high at ages 25 or over, as shown in detail in the table following. The census mortality statistics, however, are subject to the criticism that in all probability the facts are understated on account of defective enumeration, and the table must, therefore, be used with caution.

MORTALITY FROM ALL CAUSES AMONG MARBLE AND STONE CUTTERS, COMPARED WITH THAT OF THE MANUFACTURING AND MECHANICAL CLASS AND THE MERCANTILE AND TRADING CLASS, IN THE REGISTRATION STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Age at death.	Death rate per 1,000 among—		
	Marble and stone cutters.	The manufacturing and mechanical class.	The mercantile and trading class.
15 to 24 years.....	3.35	4.43	2.00
25 to 44 years.....	9.32	8.35	6.72
45 to 64 years.....	24.72	20.16	19.91
65 years or over.....	122.91	105.43	93.79

A further difficulty in connection with the vital statistics of stone and marble cutters results from the fact that men in this trade are a very mobile element, frequently moving from one place to another in response to better trade conditions, higher wages, etc., in other fields. The most suggestive results of the census mortality investigation is the extraordinary death rate from consumption, which is returned at 5.41 per 1,000, compared with 2.62 for the mechanical and manufacturing class, and 1.66 for the mercantile and trading class. The statistics of Rhode Island and the United States census of 1900 confirm, therefore, the conclusion that consumption among men employed in the stone industry is of exceptional frequency and in fact by far the most common cause of death.

For reasons unknown, the Report of the Registrar-General for England and Wales does not specifically consider stonecutters, but they are combined with quarrymen in stone and slate, which, of course, precludes the utility of the resulting averages in an effort to determine the relative degree of consumption frequency in a well-defined specific occupation such as the stonecutter's trade. Even when considered as a group, however, quarrymen and stonecutters combined, according to English statistics, show an excessive mortality from consumption and other respiratory diseases, but it is a matter of regret that the data should not be separately available for men employed in the more important branches of the stone industry.

The recorded industrial insurance mortality experience of stoneworkers includes 858 deaths from all causes, of which 302, or 35.2 per cent, were from consumption. Of the mortality of stoneworkers from respiratory diseases other than consumption, 95 were from pneumonia, 13 from asthma, 30 from bronchitis, and 24 from less frequent respiratory diseases. If the deaths from consumption and from respiratory diseases other than consumption are combined, it is found that 54.1 per cent of the mortality of stoneworkers was from diseases of the lungs and air passages. The excessive mortality from lung diseases among stoneworkers is therefore sustained by all of the numerous investigations which have been made into the health conditions of this employment. The excess in the consumption mortality of stoneworkers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 35 to 44, when out of every 100 deaths from all causes 47.7 were from consumption against an expected normal proportion of 23.6. The analysis of the consumption mortality of stoneworkers in detail is set forth in the table following.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG STONEMEN, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for stonemasons from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of stonemasons, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Stonemasons.	Males in registration area, 1900 to 1906.
15 to 24 years.....	21	10	47.6	27.8
25 to 34 years.....	114	60	52.6	31.3
35 to 44 years.....	172	82	47.7	23.6
45 to 54 years.....	232	91	39.2	15.0
55 to 64 years.....	199	52	26.1	8.1
65 years or over.....	120	7	5.8	2.7
Total.....	858	302	35.2	14.8

The preceding observations and statistical data, including the industrial insurance mortality experience of this class, fully confirm the conclusion that this occupation is to be classed as decidedly unhealthful and that the degree of consumption frequency is materially above the normal at all ages, but that the excess is most marked at ages 35 to 44.

MARBLE WORKERS.

Marble workers constitute a distinctive and well-defined group of the stone industry, which it has seemed best to consider separately, though most of the general statistics appertaining to the occupation are included in the stone industry considered as a whole. The American marble industry is centered chiefly in Vermont, where about 60 per cent of all the marble produced in the United States is quarried, and most of it is cut and dressed, sawed, or polished, as the case may be, in the locality where quarried. The Vermont state board of health has for some six years past reported the mortality by occupations, and of the deaths of marble workers reported in that State, out of a mortality of 42 from all causes, 5 were from consumption and 5 from other respiratory diseases. The fact that Vermont is an otherwise exceptionally healthful State goes far to mitigate the intrinsic dangers of the occupation resulting from continuous exposure to the inhalation of stone dust.

Bertillon, in his observations on morbidity and mortality, refers to stonecutters and workers in marble in Switzerland as being subject to a considerable mortality, principally from phthisis, which rapidly increases with age. Under 20 years of age, according to this authority, it is rarer than among the mass of the population; from 20 to 29 it equals the average, from 30 to 39 it is double, from 40 to 49 it is

triple, and from 50 to 59 it is four times the average rate of the Swiss as a nation. He also refers to Italian statistics, which are significant on account of the remarkable development of the marble industry at Carrara, stating that stonecutters and pavers average fewer days of sickness than the whole population up to 45 years, but considerably more above that age. At Paris the workers in marble are subject to a high death rate at all ages.

A very instructive descriptive account of the machine process as generally employed in the marble industry was included in the report on the stone industry for 1908, by Mr. W. C. Day, of the United States Geological Survey, from which the following extract is made as emphasizing the more or less health-injurious circumstances of employment in marble manufacture:

After being sawed the slabs are placed on a "rubbing bed," which consists of a circular cast-iron plate, from 8 to 15 feet in diameter, the older forms having a circular opening from 1 foot to 18 inches in diameter in the center. The plate is planed to a smooth surface and is mounted upon running gear so that it may revolve in a horizontal plane. Fixed arms, usually four in number, are sustained radially about one-fourth of an inch above the plate, either by an upright passing through the central opening or by a framework overhead (in the case of the newer solid forms of bed). The slabs of stone to be polished are placed upon the bed in front of the arms, and the bed is revolved slowly beneath them in such a direction as to hold them firmly against the arms. An abrading material, such as sand, sometimes mixed with "chilled shot," or crushed steel, with a constant supply of water, is fed upon the plate. If necessary, the stones are weighted to increase the friction. From this rubbing bed the slabs are removed to the emery bed, which is similar to the former, fine emery being used for abrasion. They are then rubbed down by hand with a fine, evenly grained sandstone, commonly called a "Scotch hone," with a sufficient supply of water, and smoothed off with pumice stone and water. The final polish is put on by rubbing the slabs upon a buffing bed, similar in form to the rubbing bed, but covered with a thick, specially prepared felt, upon which a small amount of "putty powder" (oxide of tin) is fed, to give a high gloss. The hand process consists in grinding on the rubbing bed as before, and then rubbing down by hand successively with Nova Scotia "blue stone," "red stone," "Scotch hone," and pumice stone, after which it is glossed with putty powder, or, in case of cheaper "onyxes" and common marbles, with a mixture of two parts of oxalic acid and one part of tin oxide.

In marble cutting, as in the stone industry generally, the introduction of pneumatic tools operated by compressed air has brought in a new and decidedly health-injurious factor, since the amount of dust generated by this process is very much greater than when the work is done entirely by hand with the ordinary chisel and mallet. Portable stone-dressing machines have been invented and quite widely

adopted, since in part the quality of the work done by these machines is superior to hand work, while the productive capacity is claimed to be from eight to fifteen times as much as when the work is done entirely by hand. Exhaust air is employed to keep the stone clean at the point of impact of the cutting tool, but the clouds of dust raised by this apparatus are considerable, even though the work is usually done outside of the shed. Aside from the dust generated in either machine or hand cutting, a vast amount of dust is produced during cleaning-up operations, and while labor organizations have, in part, provided against this risk by special regulations, the generation of much dust is practically unavoidable under the existing methods by which the work is carried on.

The United States census mortality statistics combine marble and stone cutters, so that it is impossible to separately consider statistically the mortality of this employment. As has been previously pointed out in discussing stonecutters generally, the evidence is entirely conclusive that the mortality from consumption and other respiratory diseases among this class is decidedly excessive. It is observed in the report on Vital Statistics of the census of 1890 (Vol. I, p. 144) that "it will be seen from the preceding table that among marble and stone cutters in the United States the greatest proportion of deaths was due to consumption, being much greater than the average proportion due to this cause in this class. The proportion of deaths of marble and stone cutters in the United States due to diseases of the respiratory system was greater than the average proportion in this class." The respective rates per 1,000 living were 3.15 for consumption against an average of 2.11 and 1.91 for other respiratory diseases against an average of 1.54 among occupied males in manufacturing and mechanical industries generally.

The recorded industrial insurance mortality statistics of marble cutters include 200 deaths from all causes, of which 56, or 28 per cent, were from consumption. Of the mortality of marble workers from respiratory diseases other than consumption, 26 were from pneumonia, 7 from asthma and bronchitis, and 3 from less frequent respiratory diseases. If the deaths from consumption and from respiratory diseases other than consumption are combined, 46 per cent of the mortality of marble workers was from diseases of the lungs and air passages. The excess in the consumption mortality of marble workers is less than the excess in the consumption mortality of stone-workers generally, and this fact is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was high during the entire active working lifetime of marble workers, the excess in the mortality was most pronounced at 25 to

34, when out of every 100 deaths from all causes 50 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of marble-cutters in detail is set forth in the table below :

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG MARBLE CUTTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for marble-cutters from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of marble cutters, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Marble-cutters.	Males in registration area, 1900 to 1906.
15 to 24 years.....	3			27.8
25 to 34 years.....	30	15	50.0	31.3
35 to 44 years.....	40	16	40.0	23.6
45 to 54 years.....	46	16	34.8	15.0
55 to 64 years.....	50	7	14.0	8.1
65 years or over.....	31	2	6.5	2.7
Total.....	200	56	28.0	14.8

The preceding observations and statistical data, derived from industrial insurance mortality experience, confirm the conclusion that the degree of dust exposure in this occupation is about the same as among stoneworkers generally and that the degree of consumption frequency among marble cutters is materially above the average, but decidedly so at ages 25 to 34.

THE GLASS INDUSTRY.

The glass industry in the United States gives employment to some 50,000 wage-earners, of whom about 10 per cent are children under 16 years of age. The industry is a varied one, including among others the manufacture of blown and pressed ware, of window glass and plate glass, and finally of so-called crystal or cut glass, which for the present purpose is considered as a separate industry. The labor division of the trade includes numerous and well-defined occupations, each of which is subject to more or less injurious circumstances, but of these the handling of materials and the mixing are the most liable to the risk of continuous inhalation of mineral dust. The most important employment is that of the glass blower, but there are few accurate statistics which separate this employment from the industry as a whole. For the present purpose, however, it has seemed best, as far as practicable, to consider the mortality of glass blowers by itself, although the medical observations subsequently to be quoted refer more or less to glass workers as a class. Changes in manufacturing processes and the introduction of labor-saving machinery have resulted

in sanitary improvements, which in consequence have had a favorable effect upon the health of glass blowers, at least in the United States, as far as the rather fragmentary statistical data can be relied upon. Among glass workers as a class, consumption is of exceptional frequency, in addition to which there is a comparatively high mortality from other respiratory diseases, lead poisoning, and heat prostration.

Thackrah, writing in 1832, held that glass workers as a class were liable to catarrh and cough, but not to pleurisy and pneumonia. He commented upon the appearance of a fine dust at the furnaces which, however, in his opinion did not produce any marked effect on the health of the operatives. He also mentioned individual cases of glass workers remaining at their employment at ages 70 to 80, but in the majority of instances failing eyesight at ages 50 to 60 disqualified for the employment. Thackrah's account of this occupation was, however, very superficial, and some of his conclusions were not at all in conformity to the facts as reported by other authorities. Tracy, writing in 1879, held that—

In the manufacture of glass the workmen who grind and powder the siliceous material inhale great quantities of very irritating dust, and suffer from constant hacking cough and conjunctivitis. It is rare to find a sound man among them, and they are not able to continue long at the work. According to Hirt, they should not be allowed to labor, at a stretch, more than two or three weeks, and should then work at something else, or, at any rate, give up this occupation for at least double the working time. In this way, by the use of relays, the health of the men may be sustained. (c)

Since the health-injurious effects of any given industry are, to a certain extent, measured by the proportion of those who attain to advanced ages, it is of interest to note that out of 47,245 glass workers in the United States of known ages, only 392, or 0.8 per cent, had attained to age 65 or over. The age distribution of male glass workers in the United States, according to the census of 1900, was as follows:

NUMBER AND PER CENT OF MALE GLASS WORKERS IN EACH AGE GROUP, COMPARED WITH NUMBER AND PER CENT OF MALES IN ALL OCCUPATIONS, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Male glass workers.		All occupied males.	
	Number.	Per cent.	Number.	Per cent.
10 to 14 years.....	2,840	6.0	875,342	3.7
15 to 24 years.....	17,882	37.9	5,933,720	25.1
25 to 34 years.....	13,314	28.2	5,993,847	25.3
35 to 44 years.....	7,625	16.1	4,704,682	19.9
45 to 54 years.....	3,538	8.1	3,250,259	13.7
55 to 64 years.....	1,345	2.9	1,856,181	7.8
65 years or over.....	392	.8	1,063,856	4.5
Total.....	47,245	100.0	23,677,887	100.0

* Buck's Hygiene and Public Health, Vol. II, pp. 36, 37.

The actual numbers, as well as percentages, of glass workers at advanced ages is surprisingly small. It is evident that the rapid diminution of the number at work after age 35 must be partly, at least, the result of a high death rate at the younger ages, and in particular an excessive mortality from consumption, which at this period of life causes from one-third to one-half of the deaths from all causes. Tatham, in *Oliver's Dangerous Trades*, considers this employment at some length, and his observations, based largely upon English mortality data, are quoted in part as follows:

The making, blowing, and engraving of glass occupies a prominent place among unhealthy trades for several reasons. In the first place, the workers are exposed to extreme variations of temperature—in some processes, that of glass blowing especially, the operatives are constantly exposed to the intense heat of the furnace, as well as to that which radiates from the pots of molten glass which they are engaged in blowing. The intense heat and profuse sweating naturally induce painful thirst, which the workmen evidently allay by excessive drinking; this is shown by the fact that their mortality from alcoholism and from nervous disorders is nearly double that experienced by operatives in other trades. * * * The comparative mortality figure for glass makers is 1,487, and is, therefore, in excess of the average by 56 per cent. Phthisis and diseases of the respiratory system are especially fatal to workmen in this industry, and they suffer more severely than other occupied males from diseases of the circulatory, digestive, and urinary systems, as well as from cancer. Since 1881 the mortality of glass workers has increased considerably, and this is true of the younger as well as the older workers in this industry.

The English mortality statistics upon which these conclusions rest include 1,092 deaths of glass workers, and of this number 229, or 21 per cent, died from consumption. At ages 25 to 34, however, out of 177 deaths of glass workers from all causes, 79, or 44.6 per cent, were from consumption. Of the mortality from other causes, bronchitis caused 146 deaths, pneumonia 123, and other respiratory diseases 25. These combined with deaths due to consumption make a total of 523, or 47.9 per cent, from diseases of the lungs and air passages in the mortality of glass workers from all causes. The most recent English mortality statistics of glass manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth * Annual Report of the Registrar-General, in part as follows:

In this occupation the death rates exceed the standard for occupied and retired males at all stages of life by proportions ranging from 12 to 32 per cent. In the main working period the comparative mortality figure is 1,260, or 25 per cent above the standard. The excess of mortality among these workers is most marked in the case of plumbism, phthisis, respiratory diseases, and Bright's disease; they

also suffer heavily from influenza and from diseases of the nervous and circulatory systems. The mortality from alcoholism, accident, and suicide, however, is below the average.

The recent English mortality statistics for glass workers are quite conclusive of the more or less unfavorable effect of this industry on health. In the table which follows the mortality from all causes among men in this group is compared with that of occupied males generally, and the result is decidedly suggestive of conditions in this trade more or less unfavorable to life and health. The excess in the general death rate of glass workers is met with at all ages, but the relative and actual excesses are greatest with advancing years, being 6.41 per 1,000 at ages 45 to 54, 10.83 at 55 to 64, and 30.99 at 65 or over.

MORTALITY FROM ALL CAUSES AMONG GLASS WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for glass workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	3.22	+ 0.78	132
20 to 24 years.....	4.41	5.09	+ .68	115
25 to 34 years.....	6.01	6.74	+ .73	112
35 to 44 years.....	10.22	13.14	+ 2.92	129
45 to 54 years.....	17.73	24.14	+ 6.41	136
55 to 64 years.....	31.01	41.84	+10.83	135
65 years or over.....	88.39	119.38	+30.99	135

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of glass workers from consumption and other respiratory diseases is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that the mortality from consumption is excessive at all ages, 15 to 64 inclusive, the excess being most marked at ages 35 to 54. The table further shows that the mortality of glass workers from other respiratory diseases is excessive at all ages, the excess being most marked at ages 45 or over. The two tables derived from English experience fully confirm the previous conclusion that the mortality of glass workers is excessive when comparison is made with the mortality of occupied males generally, and that this excess is largely because of the high degree of consumption frequency at

ages 25 to 54, and a high mortality from other respiratory diseases at ages 35 or over. The table which follows requires no further comment and is otherwise self-explanatory.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG GLASS WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for glass workers.			Death rate per 1,000 for all occupied males.	Death rate for glass workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.56	+0.02	104	0.24	0.28	+ 0.04	117
20 to 24 years.	1.55	1.81	+ .26	117	.45	.60	+ .12	125
25 to 34 years.....	2.03	2.88	+ .85	142	.77	.99	+ .22	129
35 to 44 years.....	2.74	4.56	+1.82	166	1.66	2.43	+ .77	146
45 to 54 years.....	3.04	4.87	+1.83	160	3.32	5.76	+ 2.44	173
55 to 64 years.....	2.16	2.97	+ .81	138	6.54	10.75	+ 4.21	164
65 years or over....	1.11	.....	.....	.....	17.77	28.68	+10.91	161

GLASS BLOWERS.

The recorded industrial insurance mortality statistics of glass blowers include 282 deaths from all causes, of which 85, or 30.1 per cent, were from consumption. Of the mortality of glass blowers from respiratory diseases other than consumption, 17 were from pneumonia, 3 from asthma and bronchitis, and 6 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 39.4 per cent of the mortality of glass blowers was from diseases of the lungs and air passages. The excess in the consumption mortality of glass blowers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. The consumption mortality was excessive at all ages under 55, but the numbers at ages 55 or over are too small for a safe generalization. The excess in the mortality was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 56.4 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of glass blowers in detail is set forth in the table following.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG GLASS BLOWERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for glass blowers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of glass blowers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Glass blowers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	24	11	45.8	27.8
25 to 34 years.....	78	44	56.4	31.3
35 to 44 years.....	59	15	25.4	23.6
45 to 54 years.....	55	11	20.0	15.0
55 to 64 years.....	26	1	3.8	8.1
65 years or over.....	40	3	7.5	2.7
Total.....	282	85	30.1	14.8

The preceding observations and statistical data confirm the conclusion that glass blowers as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

GLASS CUTTERS.

Glass cutters, including under this term all who are employed in the manufacture of crystal or so-called cut glass, constitute a separate and well-defined occupation division in glass manufacture. The most important employments are roughing, smoothing, polishing, and puttying, but of these the last named is the most injurious, chiefly because of a specific liability to lead poisoning. The sanitary aspects of the employment have received the special consideration of a British committee on dangerous trades, which, in its Third Interim Report, remarked, with special reference to the injurious effects of putty powder in the form of dust, that—

It will thus be seen that all persons employed in places where "putty powder" is used, though themselves not handling it, are liable, through inhalation of the dust, to illness and even death through juxtaposition with those engaged in its use. Under existing circumstances the wet powder splashes onto the clothes not only of the polisher who uses it, but onto those of his neighbors; it gets dry after a time, comes off in fine dust, and enters the system either by inhalation through the lungs or by swallowing or through the pores of the skin.

Among other recommendations for the amelioration of the more or less health-injurious conditions inherent in this employment, the committee suggested that all persons engaged in the department of glass cutting and powdering, where putty powder, so called, is used, should be examined once a month by the certifying surgeon for the district, who should be empowered to order temporary or permanent suspension of work.

Aside from the exposure to the inhalation of dust containing lead or other metallic ingredients, there is a further liability to the inhalation of considerable quantities of mineral dust in a large variety of forms. It would obviously be very difficult to estimate with even approximate accuracy the degree of lung injury resulting from dust exposure in glass cutting and polishing, but it is the opinion of qualified authorities that practically every branch of the trade is more or less affected, with a resulting excess in the mortality from consumption. Tracy comments briefly upon the health-injurious aspects of this occupation in part as follows:

But the most dangerous work is that of the grinders and polishers of cut glass. About 35 per cent of them have chronic pneumonia (phthisis), and their average age at death is variously given at from 30 to 42 years. Putégnat (de Lunéville) has described a peculiar form of gingivitis which he has observed among glass cutters, and which, he says, attacks 95 out of every 100 workmen. It comes on in about three months after the person begins work, and toward the sixth month is well developed. It attacks by preference the upper jaw, and is accompanied by the same blue line that is found in cases of lead poisoning. The acid secretion of the gums destroys the enamel of the teeth, which soon become pointed, brittle, and break off close to the alveoli, leaving a permanent stump. The gums remain soft and spongy, and the breath is very fetid. At no time is there any pain or hemorrhage. He supposes it to be caused by malnutrition, bad air, etc. (Tardieu). These symptoms certainly appear suspiciously like those of lead poisoning, and the suspicion is rendered stronger by the fact that French flint glass contains about 20 per cent of lead, and that other symptoms of lead poisoning are not uncommon in glass cutters, as colic, constipation, muscular pains, etc. Garrod has noticed the frequency of gout among them, and brings it forward to support his theory of a connection between that disease and saturnine poisoning.

The grinding or etching of glass by the sand blast fills the rooms with a dust composed of particles of sand and glass mingled. The business is a comparatively new one, and the workmen so far do not appear to be injured by it, with the exception of a slight tickling cough when they first begin work. The dust is rather coarse and heavy, and I am inclined to think it does not penetrate very far into the lungs, perhaps not even getting beyond the trachea, whence it is easily expectorated.

Lloyd also considered this employment, holding that—

Flint glass contains lead, being chemically a compound of silicon (silicic acid) with an alkaline and an earthy base, the latter being represented by lead. It is this flint, or lead, glass that is used for cut glass because of its brilliancy. The glass cutter's mill is a revolving disk of wrought or cast iron on which is fed a mixture of sand and water, with which the cutting and polishing are accomplished. In this process, which requires the artisan to bend closely over his mill, dust and fine particles of glass are given off. Emery and putty powder also are used, the latter containing lead. These are the noxious agents by which these cutters and polishers of flint glass acquire lead poisoning.

There are, unfortunately, no official vital statistics of this occupation, since the comparatively small group of cutters of crystal glass is included in the census vital statistics with glass workers generally. Cutters of crystal glass are continuously and considerably exposed to the inhalation of fine particles of mineral dust, which must indeed disastrously affect the lungs of the workmen, but in particular such as are otherwise predisposed to consumption. The suggestion of Oliver and others that crystal glass polishers and cutters should be periodically medically examined for cases of lead poisoning applies equally to the purpose of discovering incipient cases of tuberculosis more or less the result of the employment.^(a)

The recorded industrial insurance mortality statistics of glass cutters include 116 deaths from all causes, of which 40, or 34.5 per cent, were from consumption. Of the mortality of glass cutters from respiratory diseases, other than consumption, 12 were from pneumonia, 1 from asthma, and 2 from less frequent respiratory diseases. The numbers are rather small for a safe generalization, but if the deaths from consumption and from respiratory diseases other than consumption are combined 47.4 per cent of the mortality of glass cutters was from diseases of the lungs and air passages. The excess in the consumption mortality of glass cutters is more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages under 55, the numbers being too small for definite conclusions for older ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 46.7 were from consumption, against a normal expected proportion of 31.3.

^a For additional references to the health-injurious circumstances in glass cutting and polishing, see the Reports of the Chief Inspector of Factories and Workshops for 1895, Vol. I, p. 36; 1896, p. 25; 1899, pp. 16, 313; 1900, p. 207; 1901, Part I, p. 220. For a descriptive account of the various manufacturing processes, see *Scientific American* for April 30, 1904.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG GLASS CUTTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for glass cutters from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of glass cutters, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Glass cutters.	Males in registration area, 1900 to 1906.
15 to 24 years.....	26	7	26.9	27.8
25 to 34 years.....	30	14	46.7	31.3
35 to 44 years.....	27	11	40.7	23.6
45 to 54 years.....	20	5	25.0	15.0
55 to 64 years.....	8	1	12.5	8.1
65 years or over.....	5	2	40.0	2.7
Total.....	116	40	34.5	14.8

The preceding observations and statistical data confirm the conclusion that glass cutters as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

DIAMOND CUTTERS.

Diamond cutting, although an employment of rather limited extent in the United States, is of interest and importance as an occupation with exposure to mineral dust. Hand cutting is very rare and machine cutting is at the present time the general rule in the trade, as carried on under American conditions. There has been a decided improvement as the result of the active efforts of the Diamond Polishers' Union, which has a membership of about 400 in New York City alone. The occupation has the advantage of being well paid, at least in many individual instances, and some of the cutters are reported to receive as much as \$80 and polishers as much as \$60 a week.

The process of diamond cutting and polishing consists of two parts. After the stone has been cut it is taken to the polishing room, where the setter selects a suitable sized brass cup, called a dope, fills it with a mixture of lead and tin and melts it in a gas flame. After working the solder to its proper shape, he places the diamond in the center, leaving only a very small part exposed. A mark is made on the solder before it becomes fairly set, and then the stone is passed on to the polisher. By the mark made on the solder the latter knows at once the exact run of the grain and the way it will polish to the best advantage. The polisher uses a circular disk composed of very

porous iron, so that as the diamond is polished away in the form of dust it enters the pores of the iron, the result being that diamond cuts diamond.

According to Hirt, the first-mentioned process is exceedingly unhealthful. The bent position of the workman, the heat, and the danger of lead poisoning all contribute to make the occupation an unhealthful one. The principal bad features of the second process are the dust inhalation and the straining of the eyes. While very little dust escapes into the air, the little, according to Hirt, is very bad in its effects, as the particles are angular, sharp, and, of course, very hard.

Arlidge in his observations upon the diamond cutter's trade remarks, however, that—

From our own observation of diamond cutting and polishing we can scarcely imagine any definite morbid result from the dust of the gem. It is far too precious to fritter away into dust by any coarse grinding likely to give off a tangible quantity of this substance, and we suspect that the recorded ill health of diamond workers is chiefly attributable to accidental circumstances connected with the charcoal furnaces formerly used; to overheated and badly ventilated workshops, and to dissipated habits among the employees. So far as diamond dust may possibly be thrown off in the polishing process, so far, doubtless, would it be an irritant to the respiratory organs by reason of the very sharp and angular character of its atoms.

The employment is divided into cutters, splitters, and polishers. In Amsterdam, the chief center of the industry, some 9,000 persons are employed, according to a report by United States Consul Hill. The hygienic conditions of the trade in Amsterdam, however, are apparently less satisfactory than in the United States. The principal factors detrimental to health result from the use of tin and lead as an alloy, and a prize has been offered by the Dutch Government for a nonpoisonous composition, but thus far the requirements governing the award of the prize appear not to have been complied with. Tracy comments upon the sanitary aspects of the employment as follows:

In diamond cutting the amount of dust created is small, and yet the occupation is a very injurious one. The "setter" prepares the diamond for the cutter by soldering it on the end of a copper rod with an alloy of 4 parts lead to 1 of tin. He does this with a charcoal fire, and is exposed to great heat, as well as to poisonous gases. The setters suffer from headache, tinnitus aurium, impaired digestion, and irregularity of the bowels. In Coster's factory, at Amsterdam, 73½ per cent of them were pale and emaciated, 57 per cent had palpitation, giddiness, præcordial distress, 56 chronic headache, 36 asthma, etc. The use of solder produces lead poisoning. Out of 90 examined, 30 showed traces of poisoning. In general, they are all sick men, and suffer from lung troubles. Nine per cent had phthisis. The cutters or polishers grind the gems on iron wheels covered with

diamond dust and oil. The dust inhaled by them, though small in quantity, is enough to cause frequent chronic lung troubles. In Coster's factory, 52 per cent of them were thin and pale, 40 per cent asthmatic, 33.75 suffered from headaches, etc.

No American vital statistics of this occupation have been published, but the occupation is evidently one which requires to be classified among unhealthy trades and in which the degree of consumption frequency is the result, more or less, of the continuous and considerable inhalation of mineral dust.

POTTERS.

The pottery industry includes the manufacture of earthenware, china, and porcelain. It always has been recognized as one of the unhealthiest of trades, but the health-injurious effects vary widely according to particular employments. The most seriously exposed are the dippers, flint-mill workers, ground layers, mixers, scourers, and sweepers. In all of these employments except the first the exposure to health-injurious mineral dust constitutes a serious menace to health. In the case of dippers the liability to dust inhalation is modified and increased in seriousness by the risk of lead poisoning. The degree of dust exposure is also very serious in the case of kilnmen, mold makers, placers, pug-mill workers, sagger makers, and slip makers. In the aggregate the industry gives employment in the United States to about 16,000 persons, of whom one-fifth are women. The sanitary conditions of the trade have often been investigated, and the most recent evidence is to the effect that there have been material improvements within the last few decades. The most careful and useful observations of the industry were made by Arlidge, who for many years lived in the Staffordshire pottery district of England. Before quoting Arlidge the fact may be briefly referred to that as early as 1705 Ramazzini, in commenting upon the diseases of potters, pointed out that "not all who go by the name of potters are subject to the particular diseases of the trade," and that discrimination was necessary in the medical treatment of the different classes of employees. Ramazzini made a curious observation bearing upon the question of eye strain, which has only received qualified consideration within recent years, stating, with reference to potters, that "those who sit at the wheel and form the vessels by turning it about with their feet are apt to have a swimming in the head if their eyes are otherwise weak."

Arlidge, in discussing the effects of mineral dust in the manufacture of pottery before the Sanitary Institute in 1893, remarked at the outset that—

Scarcely any other manufacture has so strong a claim upon the attention of sanitarians as has that of pottery. It stands nearly at the

head of the list of unhealthy occupations, and exercises its pernicious effects almost wholly upon the respiratory organs, by production of bronchitis and of consumption. Thus it is found that while workmen engaged in other employments have a mortality from chest diseases of 7.86 per cent, potters exhibit one of 12.29 per cent. Likewise with respect to phthisis—nonpotters present one of 9.27 and potters one of 12.90.

After describing the various processes of manufacture and their relation to health-injurious circumstances, Arlidge discussed the relation of silica dust and its irritating effects upon the mucous membrane and epithelium of the lungs, holding the opinion that—

Clinical observation abundantly confirms this fact. For a considerable time the inhaled dust is arrested in its advance toward the lung tissue proper by the mucous secretion in the bronchial tubes, and by the expulsive energy of the cilia lining of those tubes. But at length these resistant forces weaken before the constant entry of fresh dust, and in course of time the noxious material passes into the lymph channels, and also along the finer bronchi, until it reaches the intimate structure and the air cells themselves. Here as a foreign substance it sets up inflammatory action; lymph cells spring up, the air vesicles become choked with inflammatory products, the tissue around them gets indurated (lung sclerosis), and useless as breathing tissue.

The history of these pathological changes is reflected in the symptoms exhibited by the sufferers. In the primary stage little inconvenience is felt; there arises a desire to clear the throat of some impeding mucus at the end of the day's work, or upon transition to the outer air from the warm shop, and especially on rising in the morning. This expulsive act soon develops into a cough, and relief is obtained by the expectoration of more or less blackish viscid mucus. Presently there is a feeling of tightness in the chest, and the breathing grows less free and full. As time goes on these signs of disturbed lung function become more pronounced, and in the end the patient grows asthmatic—a victim of potter's asthma.

Until this advanced stage of disorder is reached, it is singular to notice how little attention and anxiety are bestowed upon the pulmonary derangements. This is because the general health is, for the most part, not seriously affected, and inasmuch as while the sufferer breathes a warm air in his workshop or home, his lung trouble is felt as little more than an annoyance; or as something which is to be taken as a matter of course, and like his wages, as an unavoidable incident of his calling.

As with chronic maladies at large, so with potter's bronchitis and asthma; the tendency is to grow worse and the lung lesion to extend, and soon the damaged respiration reacts upon the whole frame; the sufferer can not get proper outdoor exercise, his appetite fails, his sleep is broken, the expectoration augments and grows muco-purulent, the body wastes slowly, while the increased effort to breathe entails strain upon the heart, leading not infrequently to disease of that organ, with the after consequences in the shape of dropsical effusions.

We now have before us the fully developed disease known as potter's consumption or potter's asthma.

The injurious effects of silica dust in the pottery industry are materially increased by minute particles of flint, and a further factor injurious to health is the extensive use of plaster of Paris, employed in the making of molds and models. According to Arlidge, the effects of plaster of Paris dust, however, are not apparently as serious as the very destructive effects of silica dust and small particles of flint. He draws attention to the necessity of an efficient system of ventilation as the only means by which material improvements can be brought about.

The health-injurious effects of lead, extensively used in potteries, which do not properly fall within the present discussion, must here be passed over. It is true, of course, that a considerable amount of lead dust is inhaled, but the effects are rather upon the system generally than upon the lungs. The observations of Arlidge are so entirely sustained by other qualified observers that it is not necessary to further enlarge upon the sanitary aspects of this trade. The evidence, statistical or otherwise, is conclusive that potters as a class suffer more, perhaps, from phthisis and other diseases of the lungs than employees in any other occupation, and their mortality from bronchitis and other respiratory diseases is many times as high as the mortality of occupied males generally, but it has been pointed out by Tatham, in his contribution to *Oliver's Dangerous Trades*, that—

Potters succumb to nontubercular disease of the lungs much more rapidly than they do to tubercular phthisis; and it is certain that much of the so-called potter's phthisis ought properly to be termed cirrhosis of the lung. Deaths from this affection should never be included under the head of phthisis, which term is now restricted, by universal consent, to the tubercular malady of that name.

It is also necessary to keep in mind, in discussing the pottery industry, that it divides itself broadly into two principal departments—that is, first, the making of the articles from potter's clay, and, second, their ornamentation by painting, gilding, etc. The latter group is usually defined as decorators, and sometimes as printers, and because of this fact many errors occur in occupation statistics as the result of erroneous classification—not based upon the industry as such, but upon the specific title of the employment.

One of the most health-injurious employments in the industry is that of the brushing, or dusting off, of the ware after it is taken from the kilns. Oliver, in discussing at length the sanitary aspects of china and earthenware manufacture and in particular potter's asthma and consumption, draws special attention to this process as observed in the porcelain potteries at Limoges. He states that—

The brushing off or époussetage of the fired or biscuited ware is done both by women and men by means of soft feather brushes. It

is a very dusty operation, and where there are no fans for its removal, as in some of the factories I visited, the air was thick with dust. The windows were open at the time, but currents of air obtained by this means exercised no very appreciable influence upon the dust. It is not this kind of ventilation that is required under these circumstances. In the matter of the provision of artificial means for the removal of dust and the renewal of air in the potteries of Limoges, some of the manufacturers seemed to me to be rather behind than in advance of the owners of large factories in Staffordshire. Accordingly I was not unprepared for the information that among the potters, especially the brushers off or scourers, in Limoges, the mortality from pulmonary consumption and chest diseases is high. The harmful operations in porcelain works are the emptying of the kilns, the removal of the ware from the saggars and the brushing of this ware, while the hard dust that rises during the polishing of the all but finished articles is equally dangerous. The polishing has for its object the removal of any roughness from the edges or surfaces of the ware, and it is generally done on a revolving wheel by means of a broken piece of china, the workman using this as a smoothing agent. The men and women employed in these operations are usually well covered with dust, yet it is seldom that they wear respirators. Fans for the removal of the dust were present in only very few of the factories. The employees objected to them on the ground that they created a strong draft of cold air. Doctor Raymond, one of the professors in the School of Medicine, Limoges, has made a special study of the diseases of porcelain makers, particularly of pulmonary consumption and chronic bronchitis. He found that the potteries furnished a larger number of patients suffering from lung diseases than did the other trades of the district. Of 75 deaths registered in Limoges as occurring among china makers, 36 were due to phthisis, and of 30 potters whom Raymond examined, 20 were suffering from pulmonary consumption. Pulmonary phthisis is regarded as the principal disease affecting the workers in the Limoges potteries.

The most recent English mortality statistics of potters are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

Between the ages 20 and 35 years the mortality of potters falls below that of occupied and retired males generally; at every other age, however, it shows an excess which amounts to no less than 74 per cent at ages 45 to 55 years, and to 66 per cent at ages 55 to 65 years. In the main working time of life the comparative mortality figure is 1,493, or 49 per cent above the standard. The principal excess falls under the head of respiratory diseases, for which the mortality figure is 473, or nearly thrice the standard. There is also a considerable excess in the mortality from phthisis, from nervous and circulatory diseases, and from suicide. These workers are also specially liable to lead poisoning, but from accident as well as from influenza, Bright's disease, and alcoholism their mortality is low.

In the last decennial supplement the mortality of potters was described as enormous. From the present report, however, it will be seen that since 1890-1892 their mortality has declined at every stage

of life; and in the main working period the comparative mortality figure has fallen from 1,970 to 1,420, or by no less than 28 per cent. It is satisfactory to note that in the recent period the mortality of potters from plumbism has fallen to less than half its former amount, while there has also been a substantial decline under most other headings; the mortality from respiratory and urinary diseases having fallen by about one-third, that from phthisis, nervous and digestive diseases by about one-fourth, and that from circulatory diseases by about one-fifth part. Potters, however, now fall victims in increased proportion to accident, and to suicide, and the mortality from cancer has increased by more than half. Since 1860, 61, 71 the death rates of potters both above and below 45 years of age have fluctuated somewhat, but the recent modified mortality figure is by far the lowest on record. Since 1880-1882 there has been a continuous decline of mortality from phthisis, from liver disease, and from diseases of the nervous and digestive systems.

The English statistics for potters are quite conclusive of the unfavorable effects of this industry on health. In the table which follows the mortality from all causes among potters is compared with that of occupied males generally, and the result is decidedly suggestive of conditions more or less unfavorable to life and health, but in particular at ages 35 or over, when the mortality rate from all causes exceeds by from 4.30 to 29.86 per 1,000 the corresponding mortality of occupied males generally.

MORTALITY FROM ALL CAUSES AMONG POTTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate among potters.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.62	+ 0.18	107
20 to 24 years.....	4.41	3.68	- .73	83
25 to 34 years.....	6.01	5.26	- .75	88
35 to 44 years.....	10.22	14.52	+ 4.30	142
45 to 54 years.....	17.73	31.64	+13.91	178
55 to 64 years.....	31.01	54.15	+23.14	175
65 years or over.....	88.39	118.25	+29.86	134

The preceding table is self-explanatory and requires no further comment. A more extended comparison, however, is made in the next table, in which the mortality of potters from consumption and from other diseases of the respiratory system is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that the mortality from consumption among potters is decidedly excessive at ages 35 to 64 by 1.05 to 4.10 per 1,000. Still more marked is the excess in the mortality from respira-

tory diseases other than consumption among potters at ages 35 or over, which varies from 1.63 to 17.27 per 1,000. The table which follows requires no further comment and is otherwise self-explanatory:

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG POTTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for potters.			Death rate per 1,000 for all occupied males.	Death rate for potters.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.62	+0.08	115	0.24	0.46	+ 0.22	192
20 to 24 years.....	1.55	1.34	- .21	86	.48	.58	+ .10	121
25 to 34 years.....	2.03	2.00	- .03	99	.77	.64	- .13	83
35 to 44 years.....	2.74	3.79	+1.05	138	1.66	3.29	+ 1.63	198
45 to 54 years.....	3.04	7.14	+4.10	235	3.32	10.78	+ 7.46	325
55 to 64 years.....	2.16	4.37	+2.21	202	6.54	23.10	+16.56	353
65 years or over....	1.11	.97	- .14	87	17.77	35.04	+17.27	197

With further reference, however, to the excessive mortality from respiratory diseases among potters, which, as subsequently to be shown, is confirmed by industrial insurance mortality experience, reference may be made to the discussion of the occurrence of potters' asthma, in the Report of the Departmental Committee on Industrial Diseases. The evidence submitted to the committee disclosed a decided improvement in the disease liability of potters to the fibroid form of phthisis, based upon the records of the North Staffordshire Infirmary, at Stoke-upon-Trent, covering the period 1873-1906. Upon a basis of 10,000 patients, the number of cases of fibrosis of the lungs was found to have been 145 during the six years ending with 1878, 107 during the six years ending with 1897, and only 4 during the six years ending with 1906.^a In the opinion of a qualified medical witness, the diminution was not the result of a difference in the practice of diagnosing, but a real reduction in the prevalence of the disease. The improvement in the disease liability was attributed to a betterment in the conditions of work and a more effective method of factory supervision, inspection, and control. Aside from these favorable conclusions, however, the general mortality statistics of this trade indicate continued unfavorable circum-

^a Minutes of Evidence, Departmental Committee on Compensation for Industrial Diseases, p. 60.

stances, reflected in the decidedly excessive degree of consumption frequency and a correspondingly excessive mortality from other respiratory diseases in the more advanced years of life.

The recorded industrial insurance mortality statistics of potters include 384 deaths from all causes, of which 127 or 33.1 per cent were deaths from consumption. Of the mortality of potters from respiratory diseases other than consumption, 21 were deaths from pneumonia, 18 from asthma, 12 from bronchitis, and 6 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 47.9 per cent of the mortality of potters was found to be from diseases of the lungs and air passages. The excess in the consumption mortality of potters is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes, 52.9 were from consumption, against an expected normal proportion of 31.3. The analysis in detail of the consumption mortality of potters is set forth in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG POTTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for potters from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of potters, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Potters.	Males in registration area, 1900 to 1906.
15 to 24 years.....	46	11	23.9	27.8
25 to 34 years.....	68	36	52.9	31.3
35 to 44 years.....	84	37	44.0	28.6
45 to 54 years.....	78	22	28.2	15.0
55 to 64 years.....	72	14	19.4	8.1
65 years or over.....	36	7	19.4	2.7
Total.....	384	127	33.1	14.8

Since potters are liable to an excessive mortality not only from consumption, but also from respiratory diseases generally, the analysis of the industrial insurance mortality experience has been extended to respiratory diseases other than consumption, and the number of deaths from such diseases, by divisional periods of life.

PROPORTIONATE MORTALITY FROM DISEASES OF THE RESPIRATORY SYSTEM OTHER THAN CONSUMPTION AMONG POTTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for potters from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of potters, 1897 to 1906, due to—		Per cent of deaths due to respiratory diseases other than consumption among—	
	All causes.	Respiratory diseases other than consumption.	Potters.	Males in registration area, 1900 to 1906.
15 to 24 years.....	46	1	2.2	9.7
25 to 34 years.....	68	8	11.8	10.9
35 to 44 years.....	84	10	11.9	12.5
45 to 54 years.....	78	18	23.1	12.6
55 to 64 years.....	72	17	23.6	12.2
65 years or over.....	36	1	2.8	11.6
Total.....	384	a 57	14.8	11.8

a Including 2, age unknown.

While respiratory diseases have been grouped for purpose of convenience, and on account of the comparatively small number of deaths under consideration, the returns in detail disclose the fact that it is particularly in the number of deaths from asthma that potters experience a higher mortality than occupied males generally.

In summarizing these rather extended observations and statistical data, including insurance mortality experience, the conclusion is confirmed that potters as a class are decidedly subject to a high mortality from consumption and from respiratory diseases other than consumption.

CEMENT WORKERS.

The health-injurious conditions of cement-making processes are quite well understood, being on the one hand the dust, and on the other hand noxious vapors arising through the process of burning. The vapors are probably more obnoxious than injurious, but the subject attracted sufficient attention to suggest an investigation by the Royal Commission on Noxious Vapors, in 1878. As a result of the vapors and the dust generated during the processes, cement works, as a rule, are located outside of large cities.

The health conditions in cement works have never been fully investigated, but it appears to be the consensus of opinion that the effects are not as serious as assumed upon the facts of a casual inspection. Fatal accidents have occurred as the result of asphyxiation by carbon-monoxide gas, but such cases are very rare. Cases of gassing, so-called, which do not terminate fatally, are comparatively common. Arlidge considered the employment of cement making at some length,

pointing out that the workmen are exposed to dust in an intense form, but the experience would seem to prove that the effect on health is not as serious as expected. He states that the raw materials of cement are clay with flint and lime, and he briefly describes the process of manufacture as follows:

After the materials have been well mixed and ground together in a sort of mortar mill to the consistency of liquid mud, the next business is to drive off the water by heat, and then to subject the dried substance in tins to a still higher temperature. Later all the cement is withdrawn and then ground between rollers to the requisite fineness. The primary mixing and grinding, being done with a free supply of water, exhibits no unsanitary conditions. In working the kilns the workmen suffer from great heat and dust, but the most continuous dusty work is in the mill, the air of which is clouded with cement. Inquiry among the workmen elicited the fact that after a while they become short of breath and suffer cough, though not in a high degree, and that on arising in the morning they had to clear their chests by expectorating viscid mucus containing cement dust.

The amount of dust generated in cement-making processes is enormous. The workmen take practically no precaution to avoid this dust, and considerable quantities are of necessity inhaled. It is very rare to find employees who use a respirator or even a piece of ordinary cloth to provide some protection against the health-injurious conditions which surround them. The conditions are probably at their worst in the sacking or packing department, where such precautions are occasionally adopted. Every department, however, is filled with dust, and the avoidance of its inhalation by the majority of employees is under present methods practically impossible. The disease problem is complicated by a high degree of temperature in some of the departments, in particular at the kilns. While many descriptive accounts of the industry have been published, the hygiene of the occupation has been practically ignored. Tracy refers to it very briefly, holding that "the workmen who make Portland cement are greatly troubled by the dust, caused by shoveling the mass into sacks after it has been burned and ground. They have a persistent cough, and expectorate little lumps of cement. They find it impossible to continue this part of their labor day after day, and are obliged to take intervals of rest."

Parry, in his treatise on *The Risks and Dangers of Various Occupations*, refers to cement workers as follows:

Those engaged in the manufacture and use of Portland cement are very liable to get the dust into their lungs. Portland cement is made from some substance containing carbonate of lime, such as white chalk, existing in such immense quantities in this country, and some material containing silica and alumina, such as a selected clay,

or alluvial mud. These are ground together with water to a muddy consistency, which is then dried by heating in chambers. This being a wet process no dust is raised, but during the next stage, the digging out of the cement, a great deal of dust is created. The material raised is then calcined, ground between rollers, and finally packed in bags. In the last two operations, the grinding and packing, much dust is also scattered. The particles are of a sharp, irritating character, and therefore dangerous.

In Oliver's *Dangerous Trades*, the manufacture of cement from a hygienic point of view is briefly discussed and illustrated by a microphotograph of cement dust by Migerka. Oliver's description is as follows:

Under the microscope are seen a few sharp-edged little plates and amorphous masses like small clumps. The particles are not of themselves so dangerous as might at first sight appear. Although cement workers suffer from pulmonary disease, they do not do so to the great extent that might be expected. Probably the harmful effects are largely due to the hygroscopic character of the particles and their alkaline reaction.

There are no official vital statistics of this employment for the United States or for England and Wales. The recorded industrial insurance mortality statistics of cement workers include only 88 deaths from all causes, of which 17, or 19.3 per cent, were deaths from consumption. Of the mortality of cement workers from other respiratory diseases, 5 were from pneumonia and 3 from other diseases of that class. If the deaths from consumption and from other respiratory diseases are combined, it is found that 28.4 per cent of the mortality of cement workers was from diseases of the lungs and air passages. The excess in the consumption mortality of cement workers is more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG CEMENT WORKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for cement workers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of cement workers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Cement workers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	10	1	10.0	27.8
25 to 34 years.....	12	3	25.0	31.3
35 to 44 years.....	19	4	21.1	22.6
45 to 54 years.....	15	6	40.0	15.0
55 to 64 years.....	19	3	15.8	8.1
65 years or over.....	13			2.7
Total.....	88	17	19.3	14.8

The foregoing observations confirm the conclusion that cement makers as a class are subject to conditions more or less injurious to health, but the evidence is as yet inconclusive that these conditions predispose to an excessive mortality from consumption. (*)

PLASTERERS.

The building trades are all more or less exposed to the inhalation of mineral dust, the injurious effects of which are probably most severe in the case of plasterers, masons, and allied occupations. This group of occupations is not clearly defined, since many plasterers are also masons, or bricklayers, while others are whitewashers or paper hangers. The English vital statistics combine plasterers, whitewashers, and paper hangers.

The health conditions in this trade were commented upon by Ramazzini, who, in the quaint language of the day, states that "Lime and Plaister are likewise offensive to those who burn them or handle them, or sell them," and he continues: "I have frequently observed that those who boil, prepare, grind, sift, or sell it, do usually labor under a difficulty of breathing." As a safeguard, Ramazzini points out that: "Though such workmen have a cover for their mouth, they can not avoid receiving the flying particles at the mouth and nose, upon which these particles enter the passages of respiration and mix with the lymph, rise up in hard, chalky concretions, or by daubing the winding passages of the lungs intercept freedom of breath. I found," he observes, "that such as continued in this business did die asthmatic and cachetik." He refers also to a still earlier author, Morton, who connected the inhalation of the dust with consumption of the lungs. He concludes his observations with the statement that: "Care must be taken to observe the caution laid down above, with intent to guard the mouth as much as possible from receiving the offensive particles." All this was written more than two hundred years ago.

* How widely qualified opinions differ with regard to the health-injurious effects of mineral dust derived from lime and cement is made evident by the following quotation from the Journal of the American Medical Association, December 12, 1908:

Selkirk has investigated a general opinion among lime workers that they are exceptionally free from bronchitis and pulmonary tuberculosis. He was unable to find an instance of phthisis among them, nor could he learn on inquiry of any worker in limekilns having died from tuberculosis. He asks whether those who inhale and swallow much lime are abnormally free from tuberculosis of the lungs. He discusses what is known of the therapeutics of calcium salts, and says it appears that the continued absorption of calcium from the lungs and intestines might maintain an abnormally high percentage of it in the blood. He suggests that the workingman predisposed to tuberculosis might turn his attention to lime and cement working as an occupation, and even hints at the organization of lime works as a curative tuberculosis colony. A rapid increase of weight is commonly observed in new workers at the Warren Cement Works at Hartlepool.

Thackrah, writing in 1832, took a more favorable view of the employment, holding that bricklayers and their laborers, while particularly exposed to lime dust, suffered from diseases of the eye and cutaneous eruptions, but not from internal disease, and he quotes an adage common to the workmen in the trade of the period, that "bricklayers and plasterers' laborers, like asses, never die." Regarding plasterers and whitewashers, who are also exposed to lime dust, he states: "They suffer from no sensible injury," and that "they are more pallid and less robust than bricklayers." Thackrah, however, did not sustain his observations by trustworthy data.

In Rhode Island during the ten years ending with 1906, the number of recorded deaths of plasterers from all causes was 25, and of this number 5, or 20 per cent, were from consumption, and 4, or 16 per cent, from other respiratory diseases. Of the total mortality 9, or 36 per cent, were from diseases of the lungs and air passages.

The most recent English mortality statistics of plasterers and paper hangers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

Between the ages of 35 and 65 years the death rate in this industry exceeds the standard for occupied and retired males, while at ages outside these limits the rates are below it. In the main working period of life the comparative mortality figure is 1,018, or within 1 per cent of the standard. The mortality from alcoholism and liver disease, from phthisis, from respiratory diseases, and from cancer, slightly exceeds the standard, and except that these workers appear to suffer but little from influenza, the figures for other diseases agree closely with the average.

The English occupation mortality statistics for plasterers are somewhat impaired in value by the fact that paper hangers and whitewashers are combined with this occupation, but the statistics may safely be accepted as indicating with approximate accuracy the specific disease liability of men in this employment to consumption and respiratory diseases. In the table which follows the mortality from all causes among men in this group is compared with that of occupied males generally, and the result is rather suggestive of conditions in this trade more or less unfavorable to life and health. The excess in the general mortality is most marked at ages 35 to 64, when the death rate of plasterers from all causes exceeds the mortality of occupied males generally by from 1.30 to 1.52 per 1,000. The mortality of plasterers, however, is below the average at ages under 35, and at 65 years or over.

MORTALITY FROM ALL CAUSES AMONG PLASTERERS, PAPER HANGERS, AND WHITEWASHERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for plasterers, paper hangers, and whitewashers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	1.52	- 0.92	62
20 to 24 years.....	4.41	3.44	- .97	78
25 to 34 years.....	6.01	4.07	- 1.94	68
35 to 44 years.....	10.22	11.52	+ 1.30	113
45 to 54 years.....	17.73	19.18	+ 1.45	108
55 to 64 years.....	31.01	32.53	+ 1.52	105
65 years or over.....	88.89	72.18	- 16.21	82

The preceding table is self-explanatory and requires no further comment, except that it confirms the view that the health-injurious effects of this employment are not as pronounced as in many other dusty trades, but in particular such occupations as stonecutting, pottery manufacture, glass blowing, etc. In the table which follows the mortality of plasterers from consumption is compared with the normal mortality of occupied males from this disease by divisional periods of life. The comparison shows that the mortality from consumption is above the normal at ages 35 or over, but it is only at ages 15 to 24 years that it is set forth in detail in the table below :

MORTALITY FROM CONSUMPTION AMONG PLASTERERS, PAPER HANGERS, AND WHITEWASHERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for plasterers, paper hangers, and whitewashers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.41	- 0.13	76
20 to 24 years.....	1.55	1.06	- .49	68
25 to 34 years.....	2.03	1.22	- .81	60
35 to 44 years.....	2.74	3.98	+ 1.24	145
45 to 54 years.....	3.04	3.62	+ .58	119
55 to 64 years.....	2.16	4.01	+ 1.85	186
65 years or over.....	1.11	1.53	+ .42	138

The recorded industrial insurance mortality statistics of plasterers include 577 deaths from all causes, of which 136, or 23.6 per cent, were

from consumption. Of the mortality of plasterers from respiratory diseases other than consumption, 67 were from pneumonia, 5 from asthma, 14 from bronchitis, and 7 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 39.7 per cent of the mortality of plasterers was from diseases of the lungs and air passages. The excess in the consumption mortality of plasterers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages under 65, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 44.9 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of plasterers is set forth in detail in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG PLASTERERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for plasterers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of plasterers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Plasterers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	25	7	28.0	27.8
25 to 34 years.....	78	35	44.9	31.3
35 to 44 years.....	107	38	35.5	23.6
45 to 54 years.....	127	35	27.6	15.0
55 to 64 years.....	121	16	13.2	8.1
65 years or over.....	119	5	4.2	2.7
Total.....	577	136	23.6	14.8

The preceding observations and statistical data, including the industrial insurance mortality experience of this occupation, would seem to confirm the conclusion that this employment is injurious to health, and that the degree of consumption frequency is above the average at all ages under 65, and decidedly so at ages 25 to 34.

PAPER HANGERS.

Paper hangers, equally with plasterers, are exposed to a considerable risk of mixed-dust inhalation, chiefly of mineral origin. During the operation of removing old wall paper from the walls a large amount of dust is created, against which practically no precautions are taken and no effort is made to reduce the dust to a minimum. Since wall paper often, if not as a rule, contains colored pigments more or less injurious to health and occasionally poisonous metallic

substances, such as arsenic, there is an additional risk to health from this source which occasionally has assumed serious proportions. It would seem that a rational health administration should intervene to compel a previous disinfection of premises in which consumptives have died before the same are permitted to be redecorated by plasterers or paper hangers.

In Rhode Island during the 10 years ending with 1906 the number of recorded deaths of paper hangers from all causes was only 14, but of these 3, or 21.4 per cent, were from consumption, and 3, or 21.4 per cent, from other respiratory diseases. Of the total recorded mortality 6, or 42.8 per cent, were from diseases of the lungs and air passages.

The recorded industrial insurance mortality statistics of paper hangers include 319 deaths from all causes, of which 107, or 33.5 per cent, were from consumption. Of the deaths of paper hangers from other respiratory diseases, 30 were from pneumonia and 8 from other diseases of this class. The mortality of paper hangers from consumption was excessive at ages 15 to 44, but most so at ages 35 to 44, when of the deaths from all causes 44.6 per cent were from this disease, against a normal expected proportion of 23.6. The following table analyzes the consumption mortality of paper hangers:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG PAPER HANGERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for paper hangers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of paper hangers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Paper hangers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	33	14	42.4	27.8
25 to 34 years.....	96	47	49.0	31.8
35 to 44 years.....	74	33	44.6	22.6
45 to 54 years.....	53	8	14.5	15.0
55 to 64 years.....	24	4	11.8	8.1
65 years or over.....	27	1	3.7	2.7
Total.....	319	107	33.5	14.8

There are no official vital statistics of paper hangers as a class separate and distinct from plasterers and similar occupations, and the only source of accurate information regarding the degree of consumption frequency among men in this employment is the industrial insurance mortality statistics, briefly referred to above.

When the insurance mortality statistics of paper hangers are compared with those of plasterers, the statistical evidence appears to be

conclusive that the degree of consumption frequency among paper hangers is decidedly higher than the corresponding degree of consumption frequency among plasterers. While at all ages the proportion of deaths from consumption was 23.6 per cent for plasterers, it was 33.5 for paper hangers; at ages 15 to 24 the respective consumption percentages were 28.0 for plasterers against 42.4 for paper hangers; at 25 to 34, 44.9 per cent for plasterers and 49.0 per cent for paper hangers; at 35 to 44, 35.5 per cent for plasterers against 44.6 per cent for paper hangers. At ages 45 or over the percentages were more favorable to paper hangers than to plasterers.

Summarizing the rather limited amount of statistical information regarding the mortality of paper hangers, the available data would seem to warrant the conclusion that the degree of consumption frequency in this occupation is decidedly excessive at ages under 45 when comparison is made with occupied males generally and the occupation of plasterers in particular.

FOUNDRYMEN AND MOLDERS.

Foundrymen and molders are to a very considerable degree exposed to the continuous inhalation of both metallic and mineral dusts. While the proportion of metallic dust is quantitatively small, it is probably the more injurious of the two, although its effects are modified by the relatively much larger amount of mineral dust. The industry is varied, of large extent, and widely distributed throughout the country. The conditions affecting health naturally vary, and chiefly so on account of the metal used in casting, which may be iron, steel, brass, etc. The employments in foundry practice are chiefly those of molders and clay mixers, of which molders, again, are subdivided into those who work at a bench, or in the making of small ware, and those who work on the floor or in the pits in the making of castings of larger size. Within recent years labor-saving appliances have been extensively introduced into the large foundries, chiefly in connection with iron and steel works, but corresponding progress has not been made in the smaller establishments. The introduction of machinery has led to the employment of much unskilled labor of low grade, which complicates the value of the available mortality returns. It is also necessary to take into consideration the not inconsiderable accident liability of men employed in foundries, and the occasional or general exposure to extreme heat and the liability to overstrain inseparable from the lifting of heavy weights of metal.

An investigation into the sanitary aspects of this employment made by the state board of health of Massachusetts disclosed the fact that at fourteen foundries in which castings of all kinds were made, in seven the conditions as to light, ventilation, and dust removal were

very poor. Of nine stove foundries inspected, four presented moderately bad and one distinctly bad conditions affecting the health of employees. In the polishing room of one factory, conducted under almost ideal conditions, the emery wheels were well equipped with hoods and exhaust ventilators, but the report states that "the men, unmindful of the protection provided, habitually remove the hoods, and become covered with emery and iron particles."

In reporting in some detail upon the establishments found to be more or less unsatisfactory as to light, ventilation, and dust removal, the report states that one shop "employs 275 men, in low-studded, poorly lighted, unventilated buildings, in which there is no attempt to remove the dust arising from the processes of polishing and buffing by hoods and exhaust ventilation. In the tumbling room the dust is so thick that objects a few feet distant can not clearly be made out. Many men refuse to work in this establishment in the hot months, on account of the excessive heat and general discomfort."

The vital statistics of this group of employments are not conclusive. In Rhode Island 157 deaths of molders have been recorded during the period 1897 to 1906, and of this number 31, or 19.7 per cent, were from consumption, 21 were from pneumonia, and 4 were from asthma and bronchitis, a total of 35.6 per cent of the mortality from all causes from diseases of the lungs and air passages. Respiratory diseases other than consumption are shown to have been of about the same degree of relative frequency as consumption.

The high mortality of foundrymen and molders from consumption observed to occur at advanced ages is decidedly suggestive. Evidently the progress of the disease in these occupations is slow, and often, if not as a rule, assumes the form of fibroid phthisis. There can be no question of doubt that there is in these occupations an intimate connection between the continuous exposure to metallic and mineral dust inhalation and the relative frequency of the disease. Considering the nature of the dust inhaled, this is what would be expected. The dust being largely mineral, but partly metallic, the proportion of iron dust, while quite considerable, is not so great in quantity as the iron dust inhaled by men engaged in cutlery grinding or file cutting. No doubt many of the dangers of the employment could be guarded against by attention to safety devices, chiefly respirators, to be worn during the actual mold-making processes. The employment, by its very nature, however, precludes very radical methods of dust prevention, and the most effective safeguard would be short hours of labor and a rational use of spare hours and vacations.

There are no official vital statistics of these occupations either for the United States or for England and Wales. The recorded industrial insurance mortality statistics of foundrymen and molders are very extensive and include 1,397 deaths from all causes, of which 311,

or 22.3 per cent, were from consumption. Of the deaths of foundrymen and molders from respiratory diseases other than consumption, 14 were from asthma, 21 from bronchitis, 211 from pneumonia, and 31 from other diseases of this class. If the deaths from consumption and from other respiratory diseases are combined, 42.1 per cent of the mortality of foundrymen and molders was from diseases of the lungs and air passages. The mortality of foundrymen and molders was excessive at all ages over 25, but the excess was most pronounced at ages 25 to 34, when out of every 100 deaths of foundrymen from all causes, 40.4 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of foundrymen and molders in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG FOUNDRYMEN AND MOLDERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for foundrymen and molders from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of foundrymen and molders, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Foundrymen and molders.	Males in registration area, 1900 to 1906.
15 to 24 years.....	122	29	23.8	27.8
25 to 34 years.....	228	92	40.4	31.3
35 to 44 years.....	300	82	27.3	23.6
45 to 54 years.....	292	65	22.3	15.0
55 to 64 years.....	239	27	11.3	8.1
65 years or over.....	216	16	7.4	2.7
Total.....	1,397	311	22.3	14.8

The preceding observations and statistical data, derived chiefly from industrial insurance mortality experience, seem to confirm the conclusion that this employment is more or less injurious to health, and that the degree of consumption frequency is excessive at ages 25 or over.

CORE MAKERS.

Core making is an essential branch of foundry practice. The occupation gives employment to a considerable number of young persons, mostly boys, but of late years girls have been drawn into the trade, although it is held that the more arduous duties and surrounding conditions of the occupation are unsuited to the female sex. No qualified investigation appears to have been made into the health conditions of this employment, but in a general way the conditions approximate those of foundry practice in general. There is a considerable exposure to both mineral and metallic dust, but the fact that large numbers follow this occupation for only a comparatively short time no

doubt prevents the more serious results which would follow if the exposure were continued for many years.

There are no official vital statistics of these occupations either for the United States or for England and Wales. The recorded industrial insurance mortality statistics of core makers include 162 deaths from all causes, of which 48, or 29.6 per cent, were from consumption. Of the mortality of core makers from respiratory diseases other than consumption, 24 were from pneumonia and 4 were from other diseases in this group. If the deaths from consumption and from other respiratory diseases are combined, 46.9 per cent of the mortality of core makers was from diseases of the lungs and air passages. The excess in the mortality from consumption falls almost exclusively upon ages under 45, since comparatively few deaths have occurred at ages 45 or over. The analysis of the consumption mortality of core makers is set forth in detail in tabular form below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG CORE MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for core makers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of United States census.]

Age at death.	Deaths of core makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Core makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	66	20	30.3	27.8
25 to 34 years.....	42	17	40.5	31.3
35 to 44 years.....	25	9	36.0	23.6
45 to 54 years.....	9	1	11.1	15.0
55 to 64 years.....	9	1	11.1	8.1
65 years or over.....	11	.....	.....	2.7
Total.....	162	48	29.6	14.8

While statistical information regarding persons employed as core makers is very limited, the evidence is entirely conclusive that the degree of consumption frequency in this occupation is decidedly excessive at ages 15 to 44, inclusive.

LITHOGRAPHERS.

Lithographers constitute an important branch of the printing trade. In the census reports lithographers are included in the occupation statistics of printers and pressmen, so that the actual number of lithographers in the United States is not known. For hygienic reasons the employment of the lithographer requires to be considered separately from printing and engraving, since in the former the exposure is chiefly to mineral dust, while the latter are exposed primarily to the inhalation of metallic dust. Lithographic stone has

been defined as a fine, compact homogeneous limestone, practically all of which is imported from Germany. The small amount of lithographic stone quarried in the United States varies in its mineral and metallic constituents from the Bavarian stone, containing nearly 7 per cent of magnesia. No accurate observations have been made a matter of record to determine the degree of possible lung injury resulting in the case of the lithographer's occupation, but it is safe to assume that the employment requires to be included in the group of dusty trades. This conclusion is fully sustained by a knowledge of the technical processes which constitute the lithographic art.

The sanitary conditions of this employment received consideration by Sir John Simon in his report as medical officer of the privy council. Simon called attention to the dust resulting from the use of colors and pigments, against the inhalation of which only very few of the workmen had adopted intelligent precautions. The most pernicious of the mineral colors employed in connection with lithography were emerald green and bronze. Simon did not connect the inhalation of this dust with the occurrence of phthisis, but the inference would seem warranted that such a connection exists, at least in exceptional cases.

Parry, in his treatise on Risks and Dangers of Various Occupations, confirms this earlier opinion, and holds that in lithographing green arsenical pigments are used, the poisonous dust of which is inhaled and conveyed to the stomach. It is evident that the poisonous character of the colors or pigments is a more serious factor than the less injurious dust of the stone itself, but how far either form of dust increases the liability to consumption has not been determined.

The most recent English mortality statistics of lithographers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General (p. lix) in part as follows:

At all ages except 20 to 25 and 45 to 55 the death rates among these workers exceed the standard for all occupied and retired males. These workers experience a lower mortality than printers up to the age of 45, but beyond that age the mortality in the two occupations differs but slightly. In the main working period of life the comparative mortality figure of lithographers is 964, or 4 per cent, below the average. Their mortality from influenza and phthisis considerably exceeds the standard, while that from respiratory diseases is below it by about an equal amount.

The English mortality statistics for lithographers are rather inconclusive as to a decidedly unfavorable effect of this industry on health, and while in the table which follows a comparison is made of the mortality from all causes of men in this group with occupied males generally, the death rates are, as a rule, below the average for occupied males generally except at ages 20 to 24 and 45 to 54, inclusive.

MORTALITY FROM ALL CAUSES OF LITHOGRAPHERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for lithographers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	1.55	-0.89	64
20 to 24 years.....	4.41	5.36	+ .95	122
25 to 34 years.....	6.01	5.62	- .39	94
35 to 44 years.....	10.22	8.41	-1.81	82
45 to 54 years.....	17.73	19.94	+2.21	112
55 to 64 years.....	31.01	30.84	- .17	99
65 years or over.....	88.39	82.25	-6.14	93

The preceding table is self-explanatory and requires no further comment, but a more extended comparison, however, is made in the next table, in which the mortality of lithographers from consumption is compared with the normal mortality of occupied males from this disease, by divisional periods of life. This table shows that the mortality of lithographers from consumption was above the average at all ages by from 0.23 to 2.17 per 1,000. The excess is not very marked and does not warrant decidedly unfavorable conclusions. The table which follows requires no further comment and is otherwise self-explanatory.

MORTALITY FROM CONSUMPTION AMONG LITHOGRAPHERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for lithographers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.77	+0.23	143
20 to 24 years.....	1.55	2.68	+1.13	173
25 to 34 years.....	2.03	2.70	+ .67	133
35 to 44 years.....	2.74	3.13	+ .39	114
45 to 54 years.....	3.04	4.27	+1.23	140
55 to 64 years.....	2.16	4.33	+2.17	200
65 years or over.....	1.11	1.44	+ .33	130

The recorded industrial insurance mortality statistics of lithographers include 160 deaths from all causes, of which 70, or 43.8 per cent, were from consumption. Of the mortality of lithographers from respiratory diseases other than consumption, 3 were from bronchitis,

18 from pneumonia, and 1 from another disease of this class. If the deaths from consumption and from other respiratory diseases are combined, 57.5 per cent of the mortality of lithographers was from diseases of the lungs and air passages. The number of deaths of lithographers included in this analysis is sufficiently large to warrant a more definite conclusion than the corresponding general vital statistics of this occupation for England and Wales. The excess in the consumption mortality of lithographers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease, by divisional periods of life. The comparison shows that the consumption mortality was excessive at all ages under 65, but decidedly so at ages 15 to 34. At 15 to 24 the proportion of deaths from consumption among lithographers was 56.8 per cent against a normal expected proportion of 27.8, while at ages 25 to 34 the proportionate consumption percentage was 62.2 for lithographers against a normal expected proportion of 31.3. The analysis of the consumption mortality of lithographers is set forth in detail in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG LITHOGRAPHERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for lithographers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of lithographers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Lithographers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	37	21	56.8	27.8
25 to 34 years.....	45	26	62.2	31.3
35 to 44 years.....	29	13	44.8	23.6
45 to 54 years.....	21	5	23.8	15.0
55 to 64 years.....	18	3	16.7	8.1
65 years or over.....	10			2.7
Total.....	180	70	43.8	14.8

The preceding observations and statistical data confirm the conclusion that lithographers as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

SUMMARY OF CONCLUSIONS REGARDING OCCUPATIONS WITH EXPOSURE TO MINERAL DUST.

In the foregoing observations and statistical data twelve occupations, involving exposure to mineral dust, have been considered in

detail. As stated in the summary of conclusions regarding occupations with exposure to metallic dust, it is not possible in all cases to base conclusions upon identical data, as official vital statistics are not available for some of the occupations here considered. The census returns of 1900 give the age distribution of marble and stone cutters, glass workers, potters, plasterers, and paper hangers, the aggregate number of such persons being 168,404. This number is exclusive of persons under 15 and of unknown ages. The statistics show that only 4,409, or 2.6 per cent, had attained to an age of 65 years or over, against a normal expected proportion of 4.7. This fact in itself is decidedly suggestive of conditions more or less unfavorable to health and life in occupations exposing to mineral dust. The details of the age distribution are given in the following table by divisional periods of life, together with the corresponding distribution of all occupied males, the data for both groups being derived from the census of 1900.

NUMBER AND PER CENT OF MALES IN EACH AGE GROUP IN OCCUPATIONS EXPOSED TO MINERAL DUST, COMPARED WITH NUMBER AND PER CENT IN ALL OCCUPATIONS IN THE UNITED STATES, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Males in occupations exposed to mineral dust.		All occupied males.	
	Number.	Per cent.	Number.	Per cent.
15 to 24 years	40,454	24.0	5,933,720	26.0
25 to 34 years	49,987	29.7	5,959,847	26.3
35 to 44 years	38,253	22.7	4,704,052	20.6
45 to 54 years	24,784	14.7	3,250,269	14.3
55 to 64 years	10,517	6.3	1,856,181	8.1
65 years or over	4,409	2.6	1,063,886	4.7
Total	168,404	100.0	22,802,545	100.0

According to this analysis, the proportion of persons aged 15 to 34 was 53.7, or more than half of the total, against 52.3 expected. At ages 35 to 44 the proportion was 22.7 for the group under consideration, against 20.6 among occupied males generally. At ages 45 or over the proportion of persons employed in occupations with exposure to mineral dust was only 23.6, against 27.1 for occupied males generally. In some of the trades included in this group a considerable amount of muscular labor is involved, and this is especially true of glass blowers and certain occupations in the pottery industry. It is, doubtless, for this reason that the age distribution in this group of employments conforms somewhat more to that of all occupied males than was true of the occupations in the group exposed to metallic dust.

It is possible to present a combined summary of the United States census vital statistics of persons employed as marble and stone

cutters, glass workers, and plasterers. A comparison of the death rates in these combined occupations with the corresponding death rates of occupied males generally is very suggestive of unfavorable health conditions in occupations exposed to mineral dust. These unfavorable health conditions manifest themselves in an increased mortality at all ages above 25, while at ages 15 to 24 the mortality rate from all causes is slightly more favorable for the occupations in this group than for occupied males generally. The number of deaths, however, in the earlier age groups is too small to warrant final conclusions. At ages 25 to 44 the death rate from all causes in the occupations of this group was 9.88, against 8.78 expected; at ages 45 to 64 the death rate in the group under consideration was 24.04, against 19.91 expected; and at ages 65 or over the rate was 106.87, against 98.44 expected. The death rate from consumption was 4.87 per 1,000, against 2.37 expected, and the death rate from other respiratory diseases was 1.99, against 1.97 expected. The details of the mortality by ages are given in the following table, together with the corresponding death rates for all occupied males, the data for both groups being derived from the census of 1900:

MORTALITY FROM ALL CAUSES AMONG MALES IN OCCUPATIONS EXPOSED TO MINERAL DUST IN THE REGISTRATION STATES, COMPARED WITH THAT OF ALL OCCUPIED MALES IN THOSE STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Age.	Males in occupations exposed to mineral dust.			All occupied males.		
	Number employed.	Number of deaths from all causes.	Rate per 1,000 from all causes.	Number employed.	Number of deaths from all causes.	Rate per 1,000 from all causes.
15 to 24 years.....	8,724	30	4.47	1,259,471	6,486	5.15
25 to 44 years.....	24,506	242	9.88	2,690,241	23,541	8.78
45 to 64 years.....	9,890	238	24.04	1,282,259	25,532	19.91
65 years or over.....	1,179	126	106.87	283,310	27,888	98.44
Total.....	44,308	645	14.56	5,805,281	83,447	15.16

* From consumption there were 216 deaths, or a rate of 4.87; from other diseases of the respiratory system there were 88 deaths, or a rate of 1.99.

† The rate of mortality from consumption was 2.37; from other diseases of the respiratory system 1.97.

The occupation mortality statistics of Rhode Island are available for four specific occupations of this group and when combined return 321 deaths from all causes, of which 79 were from consumption and 53 from respiratory diseases other than consumption. The corresponding percentages were 24.6 of deaths from consumption for persons employed in occupations with exposure to mineral dust, against 17.8 for occupied males generally in the State of Rhode Island. The percentage of deaths from respiratory diseases other

than consumption was 16.5 for the occupations in this group, against 12.5 expected.

The English vital statistics for this group of occupations are available for glass workers, potters, paper hangers and plasterers, and lithographers. When the returns for these occupations are combined they exhibit excessive death rates at all ages over 35.

The details in tabular form are set forth in the following table:

MORTALITY FROM ALL CAUSES, FROM CONSUMPTION, AND FROM OTHER RESPIRATORY DISEASES IN OCCUPATIONS EXPOSED TO MINERAL DUST, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 due to all causes among—		Death rate per 1,000 due to consumption among—		Death rate per 1,000 due to other diseases of the respiratory system among—	
	All occupied males.	Occupations exposed to mineral dust.	All occupied males.	Occupations exposed to mineral dust.	All occupied males.	Occupations exposed to mineral dust.
15 to 19 years.....	2.44	2.35	0.54	0.55	0.24	0.37
20 to 24 years.....	4.41	4.02	1.55	1.44	.48	.50
25 to 34 years.....	6.01	5.24	2.03	2.01	.77	.78
35 to 44 years.....	10.22	12.46	2.74	3.96	1.66	2.12
45 to 54 years.....	17.73	23.74	3.04	4.91	3.32	6.05
55 to 64 years.....	31.01	40.23	2.16	3.94	6.54	12.96
65 years or over...	83.30	92.60	1.11	1.13	17.77	24.50

The table shows that the mortality from consumption among men in occupations with exposure to mineral dust was decidedly excessive at ages 35 to 64, and the mortality at the other ages was not appreciably lower than for occupied males generally. The mortality from respiratory diseases other than consumption was normal in this group of employments at ages 15 to 34, but at ages 35 or over the mortality was considerably in excess of that for all occupied males.

The recorded industrial insurance mortality statistics are available for 11 occupations included in this group, returning in the aggregate 4,543 deaths from all causes. Of this number 1,299, or 28.6 per cent, were from consumption. The deaths from other respiratory diseases numbered 762, or 16.8 per cent. The expected consumption mortality on the basis of the mortality among males in the registration area of the United States for the seven-year period 1900 to 1906 was 14.8 per cent, and from respiratory diseases other than consumption 11.7 per cent. When the mortality from consumption and from other respiratory diseases is combined, the proportionate number of deaths among males in occupations with exposure to mineral dust was 45.4 against 26.5 per cent expected.

PROPORTIONATE MORTALITY FROM CONSUMPTION IN OCCUPATIONS EXPOSED TO MINERAL DUST, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for occupations exposed to mineral dust from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths in occupations exposed to mineral dust, 1897 to 1906, due to—		Per cent of deaths due to consumption in—	
	All causes.	Consumption.	Occupations exposed to mineral dust.	Males in registration area 1900 to 1906.
15 to 24 years.....	413	131	31.7	27.8
25 to 34 years.....	521	391	47.6	31.3
35 to 44 years.....	936	340	36.3	23.6
45 to 54 years.....	950	265	27.9	15.0
55 to 64 years.....	795	129	16.2	8.1
65 years or over.....	628	43	6.8	2.7
Total.....	4,543	1,299	28.6	14.8

* There were also 762 deaths from other diseases of the respiratory system, or 16.8 per cent of the deaths from all causes.

* The per cent of deaths from other diseases of the respiratory system in the registration area was 11.7.

It is evident from the foregoing observations and statistical data relating to a representative number of employments with exposure to mineral dust that the health-injurious effects of such exposure reveal themselves in a high general death rate, especially at ages 35 or over, and with correspondingly high specific death rates from consumption and from other respiratory diseases at ages 35 or over, by which time the dust inhaled has begun to show its fatal effect.

OCCUPATIONS WITH EXPOSURE TO VEGETABLE FIBER DUST.

In the group of occupations exposing to a continuous and considerable inhalation of vegetable fiber dust resulting from industrial processes the following representative employments have for the present purpose been included: Cotton ginning, cotton textile manufacture, spinning, weaving, hosiery and knitting mills, lace making, flax and linen manufacture, hemp and cordage manufacture, manufacture of jute and jute goods, paper manufacture, cabinetmaking, wood turning and carving. These occupations are all more or less subject to an excessive death rate from all causes, but in particular to a decided excess in the proportionate mortality from consumption, and in most cases also to a comparatively high degree of frequency in the occurrence of other respiratory diseases. The details of labor conditions as far as they could be conveniently included in the following summary of observations regarding particular trades appear to fully confirm the opinion that the degree of excess in consumption fre-

quency is intimately related and in almost exact proportions to the degree of exposure to continuous and considerable inhalation of vegetable fiber dust.

COTTON GINNING.

Cotton ginning is the most important preliminary process in cotton manufacture, and is carried on extensively as a separate industry throughout the Southern States. The process consists of "stripping the fiber of cotton from the seed" by a most ingenious mechanical device, the best known of which is the so-called McCarthy machine, in common use throughout the United States.^(a) An improvement, however, has been perfected, known as the so-called "saw gin," which has the decided advantage of a material increase in producing capacity. The object being to secure the largest amount of lint, or clean cotton, it is remarkable that from every ton of raw cotton only about 600 pounds reach the spinner. The amount of dust and dirt generated in the ginning process is, of necessity, very large, and the employment is, without question, decidedly detrimental to health. It is mitigated by the fortunate circumstance that it is carried on, as a rule, only for a portion of the year, and largely because of this fact the health conditions of the occupation have not attracted so much attention as would otherwise have been the case.

The enormous extent of the cotton-ginning industry is measured by the number of bales of cotton ginned during 1904, when the crop attained to 13,500,000 bales which, at 500 pounds each, represent 6,750,000,000 pounds of cotton passing through the gins. Most of the cotton is short staple, only about 1 per cent being Sea Island or long staple variety. The gins are either public or private establishments or merchant gins, all of which, however, have the essential features in common. They are now practically all run by steam power, the former use of horse or water power having almost disappeared. A ginnery includes three departments; that is, the ginhouse proper, the lint room, and the cotton compress, or screw, as it is usually known. In an early description of the conditions in the lint room, as a part of the United States census report on cotton manufacture for 1880, it was stated that—

The lint room varies in size from one-third to the full length of the end of the ginhouse to which it is attached. The lint cotton is thrown by the brush cylinder of the gin through a flue into this room. Strange to say, the lint rooms are not brushed or swept out from one season to another, or from one decade to another, for that matter. The dirt may accumulate an inch in depth on the floors and walls, but no broom is ever carried into this room from year to year.^(b)

^a For an instructive and valuable descriptive account, see the Scientific American Supplement for April 1, 1905. See also Census Bulletin No. 97, on Supply and Distribution of Cotton, for the year ending August 31, 1908.

^b Report of the Tenth Census, Vol. II, p. 945.

The ginning process itself is well described in an account of the so-called Gullett cotton-ginning system, which is in general use throughout the Southern States:

The seed cotton is elevated by suction from the wagon or storage house, and deposited in feeders over each gin. These machines feed it uniformly into the roll boxes of gins, where the lint is separated from the seed. The lint is then blown by the draft from the brush through the flue system into the condenser, which forms it into a bat and deposits it direct in the press, where it is packed by the steam packer and baled, the dust from the condenser passing out through the roof by means of the dust flues. The seed falls from the roll boxes of gins into a screw conveyor underneath, through hoppers at each gins, however, the earlier conditions still prevail, and the dust nuisance during the ginning process constitutes a serious menace to the health of the employees.

The claims for this system are economy of time and labor and the material reduction of the dust nuisance. In the large majority of gins, however, the earlier conditions still prevail, and the dust nuisance during the ginning process constitutes a serious menace to the health of the employees.

The hygienic aspects of the sanitary problems in cotton ginning were early commented upon by Daniel Drake, M. D., in his treatise on the Principal Diseases of the Interior Valley of North America, where, in considering the miscellaneous causes of pulmonary inflammation, with special reference to the Southern States, he comments upon cotton fuzz and its effects upon the respiratory organs, referring in particular to employment in cotton gins. According to Drake—

The gin is a machine of rapid motion for eliminating the seed from cotton. It throws an immense amount of broken fibers or fuzz into the atmosphere, which are of necessity taken into the lungs of those who conduct the operation, who are generally Negroes. The period of ginning does not last very long, nor are a great number of operatives necessary to the management of a gin. When traveling in the South, I learned that proprietors do what they can to promote ventilation, avoid their ginhouses, and avoid employing men who are predisposed to pulmonary disease, and often change them, so that no one shall inhale the fuzz very long. These precautions indicate, as the public opinion, that it may do harm, as indeed it undoubtedly does, but to a less extent than might perhaps be expected. (*)

The observations of Drake as to the health-injurious effects of the cotton-ginning process were confirmed by other practicing physicians of the period and the earlier view is sustained by present-day medical opinion throughout the South. Since there are no vital statistics of persons employed in cotton ginning and no published observations of

* Principal Diseases of the Interior Valley of North America, by Daniel Drake, Vol. II, p. 799.

medical practitioners at the present time, these brief observations are concluded by quoting the opinion of Mr. A. E. Thomas, a cotton planter before the war, who, with special reference to the susceptibility of the Negro, who continues to constitute the large majority of persons employed in connection with cotton-ginning processes, states that—

This subject is one of great interest with all our intelligent planters, as the effect of cotton ginning on their Negroes is very deleterious; so injurious, indeed, as to be obvious to the Negroes themselves, who endeavor to avoid the ginhouse. Planters select their oldest and least valuable Negroes for this occupation, knowing that the healthiest and most robust will, in a year or two, become diseased. To prevent these bad effects, it is not uncommon to make them wear and breathe through a veil, and give them molasses and water to drink, measures which appear to be generally effective. If a person not accustomed to breathe the air of a ginhouse goes into it while the machine is running, he is soon seized with a tickling sensation in his nostrils, followed by sneezing, coughing, and some degree of hoarseness. Continuing awhile in this situation, he begins to feel his nostrils stuffed up. After leaving the place he will have symptoms of a cold for several days. Remaining there longer, the stuffing of his nostrils may become so great as to prevent his breathing through them. The cough attendant on this affection is often dry, or small quantities of mucus, in which the lint and dust floating in the air have been entangled, will be thrown up. A feeling of soreness pervades the trachea and bronchial tubes. I have known several to have chronic bronchitis. I saw one death preceded by the discharge of an abscess from the lungs, and another die of phthisis, following on bronchitis. It is the custom every two or three weeks to stop the hands from field labor to bale the gin and cotton, at which they are commonly occupied two or three days. Before the end of this period they are apt to become affected with sneezing, coughing, and other catarrhal symptoms, which often continue for several days.^(a)

It is evident, even in the absence of conclusive statistical data, that cotton ginning is a decidedly health-injurious employment, and that it would be much more so than actually observed in everyday experience but for the fact that the occupation extends over only a comparatively short period of the year.

COTTON TEXTILE MANUFACTURE.

In 1905 the manufacture of cotton textiles in the United States gave employment to 315,874 wage-earners, of whom 46.6 per cent were adult males, 40.6 per cent women, and 12.8 per cent children.^(b) The diversity of the industry is considerable, and the processes of manu-

^a *Principal Diseases of the Interior Valley of North America*, by Daniel Drake, Vol. II, p. 801.

^b *Census of Manufactures, 1905, Part I, p. lxxviii.*

facture require a high degree of specialized labor. Every process from the so-called "opening" of the cotton in the picker room to the carding, spinning, and weaving involves a more or less considerable degree of exposure to the inhalation of vegetable fiber dust, but the exposure varies materially in the different departments. The health aspects of the industry are complicated by other injurious factors besides dust, of which high temperature, excessive humidity, atmospheric electricity, noise, eye strain, and defective ventilation are the most important. The effects upon health in cotton textile manufacture, with special reference to dust exposure, have been admirably summed up by Arlidge, who, in his treatise on *The Hygiene, Diseases, and Mortality of Occupations*, remarks:

To summarize the incidental causes of ill health among cotton operatives, they are, dust from the cotton itself in the early processes of manufacture; heat with more or less watery vapor, combined in the weaving department with dust from the Cornish clay employed for sizing; long standing, and a stooping posture in the spinning and doubling department; monotony of work; continuous strain upon the attention; and excessive noise with vibration of machinery. To these must be added vitiated air from excessive consumption of gas, from overcrowding, and general defects of ventilation.

With special reference to the frequent occurrence of lung diseases among cotton workers, Arlidge holds that—

The dust of cotton is an irritant to the pharynx and larynx, where it speedily produces a feeling of dryness and huskiness. If inhaled longer, it reaches the bronchi, and sets up cough with white mucous expectoration. The cough will be for years chiefly a morning phenomenon on first rising, but it is also induced upon leaving the warm workroom. Fine fibers of cotton are found, on microscopical examination, in the sputum, and as these make their way into the pulmonary tissue, they set up morbid action, resulting in increasing density of it on the one hand, and of emphysematous expansion on the other. These morbid changes are accompanied by dyspnoea, wastings, and debility, but rarely with hæmoptysis; and together constitute a group of symptoms not inappropriately termed "industrial phthisis." Moreover, intercurrent diseases of the lungs, such as acute bronchitis and pneumonia, often arise and terminate life; and true tubercular phthisis is no uncommon cause of death.

The following is an extract from the observations of Lloyd, who confirms the observations of Arlidge in the statement that—

The dust of cotton, or "flue" as it is called, is composed largely of cotton fiber, and it has an appreciable taste and smell, especially to a person unused to it. It causes irritation to the nose, throat, larynx, and bronchial tubes. The symptoms are dryness of the throat, huskiness of the voice, cough, and expectoration. The cough is said to be worse in the morning, the expectoration being tenacious and difficult to be gotten rid of. Fibers of cotton have been found in the sputa with the microscope. In time proliferation of connective tissue

ensues, as in most cases of industrial phthisis, and dyspnoea and emaciation occur. In many cases it is evident that a true tubercular infection takes place.

Lloyd quotes Dr. F. F. Simpson, of Spartanburg, S. C., with reference to an affection of the tonsils among cotton operatives in that State, due to the custom of sucking cotton fiber strongly into the mouth in some processes of their work, as follows:

These fibers become encysted in the crypts of the tonsils, thus becoming a source of constant irritation, and giving rise to what in that section is not inaptly termed "weavers' tonsils."

In a report of the Massachusetts state board of health on dangerous trades a similar practice is commented upon as follows:

A bad, unhygienic habit, common to all weavers who tend old-fashioned looms, is that of drawing the filling through the shuttle eye with the mouth. The weaver puts his mouth close to the shuttle, and, by means of a quick intake of breath, sucks the end of the thread through the shuttle eye, thus drawing into his mouth more or less fine lint and dust, which gives rise to spitting, and sooner or later may cause irritation of the mucous membrane of the throat.

It is explained that the gradual replacement of old-style looms by the Northrup loom, in which after the drum is filled with shuttles the action is entirely automatic, has eliminated this practice mechanically where persuasion and disinterested advice have been of no avail.

The general dust problem in textile factories is discussed in the same report at considerable length, and since the observations are descriptive of present-day conditions in the textile centers of New England, the remarks are quoted almost in their entirety as a most useful contribution to the knowledge of this important branch of occupation disease:

The presence of dust in the air of workrooms is a prominent feature in its influence on health. Aside from dirt and other impurities which may be in the stock, it is the opinion of recognized medical authorities that vegetable dusts are markedly inimical to health. Those operatives in cotton mills who are peculiarly sensitive to unhygienic influences may become seriously affected through the constant irritation of cotton dust or "fly" in the upper air passages, giving rise first to dryness of the throat and later to cough and expectoration. Flax dust is thought to be even more irritating than cotton, while dust in the woolen and silk mills (animal origin) is considered to be less harmful in its effects.

There are many departments in which processes are conducted which expose the employees to dust; but the weaving, spinning, carding, and waste rooms illustrate the important unhygienic conditions commonly associated with this disturbing element. In estimating the effects of dust upon health, the following considerations, among others, are to be borne in mind:

1. Grade of stock used, e. g., quality of cotton.
2. Quantity of dust in a given room.

3. Whether the dust is constant.
4. Type of construction of the room.
5. System of management.
6. Number and kinds of other unhygienic influences present.
7. Means of ventilation.
8. Health and susceptibility of the individual.

In some weave rooms the air is so filled with minute bits of dust as to present a hazy or "smoky" appearance throughout the room, and parts of the room are covered with the small particles which have settled thereon; while other weave rooms are practically free from such dust, there being merely a slight amount of lint or dust of microscopic fineness. Dust in ring-spinning rooms is more constant and is greater in amount than in weave rooms. In a fine-goods mill, in which a high quality of cotton is used in a properly constructed and well-regulated room, the amount of dust present is comparatively unimportant, from the point of view of health. On the other hand, in a coarse-goods mill, where waste stock is used in a low-studded and generally neglected room, the amount, constancy and character of the dust is such as to suggest the probability of real danger.

While in both weave and ring-spinning rooms there are many unhygienic factors, the principal features of the card room are (1) the amount of dust and (2) lack of proper ventilation and effective means of removing the dust. Cotton dust in the card room varies greatly both in quality and quantity. It is always considerable, owing to the carding process of freeing and cleaning the material.

In some mills it is enormous in amount, with considerable dirt as a concomitant. The quantity of dust is commonly sufficient to cause a distinct cloudiness of the atmosphere, which, in a room lacking proper ventilation, is a serious menace to the health of the operatives.

It has long been known that work which involves more or less constant confinement in a dusty atmosphere predisposes to the development of diseases of the lungs, especially of pulmonary consumption; but only in recent years, through the science of bacteriology, has the medical profession and the public been enlightened as to the specific cause of consumption, and the method of its dissemination among the susceptible. The people of to-day, therefore, in every walk of life, have a far greater responsibility thrust upon them with respect to minimizing this source of danger by the application of all reasonable sanitary measures. We have to bear in mind, then, in considering the dust problem, the possibility of the presence of "infectious dust" from dried sputum in the air of different mill rooms. Persons suffering from consumption can not always be detected in these rooms, and the habit of indiscriminate spitting involves the possibility of infection.

A comparison of the important constant or possible unhygienic influences in the ring-spinning and carding departments, with emphasis upon the dust in these rooms, is as follows:

RING SPINNING.

1. Considerable dust (constant).
2. "Infectious dust" (dried sputum).
3. Excessive heat (with artificial moisture).

4. Excessive heat (without artificial moisture in some rooms).
5. Lack of provision for a plentiful supply of fresh air.
6. Poor light.
7. Carbon monoxide gas, and excessive amounts of carbon dioxide from respiration and combustion.

CARDING.

1. Dust (abundant and continuous).
2. "Infectious dust" (dried sputum).
3. Lack of provision for a plentiful supply of fresh air.
4. Carbon monoxide gas, and excessive amounts of carbon dioxide from respiration and combustion.

There are, unfortunately, no very satisfactory or trustworthy general vital statistics of the cotton industry in the United States. The vital statistics of the census of 1890 included 1,080 deaths of male textile factory operatives, and of this number 15.4 per cent had attained to ages 65 or over. The general death rates were slightly above the average for the manufacturing class at ages 15 to 25, below at ages 25 to 65, and slightly above the average at 65 years or over. The consumption death rate for textile factory operatives was 2.27 per 1,000, or below the general average, but this in all probability was the result of defective enumeration, partly because of the crude grouping of all textile operatives as a class.

The vital statistics of the census of 1900 included 1,332 deaths of male textile operatives from all causes, and of this number 232, or 17.4 per cent, had attained to ages 65 or over. The death rates generally were below the average for males employed in manufacturing and mechanical industries, except at ages of 65 or over. Out of the 1,332 deaths from all causes, previously referred to, 313, or 23.5 per cent, were from consumption. The corresponding death rate was 2.08 per 1,000, against 2.62 for the manufacturing and mechanical class. The death rate from other respiratory diseases was 1.07 per 1,000 for textile factory operatives, against 1.81 for the manufacturing and mechanical industry class, so that for both consumption and other respiratory diseases the recorded mortality indicates a lesser liability to these diseases than is met with among occupied males in more or less similar employments. These statistics, however, can not be accepted as entirely accurate or conclusive, and they are here included only to call attention to the necessity of extreme caution in accepting the vital statistics of certain occupations where labor conditions materially interfere with the continuity of employment and where the opportunities for change from one occupation to another are rather exceptional.

The available occupation mortality statistics of Rhode Island refer to textile operatives as a class, regardless of the kind of fiber manufac-

tured, which hardly warrants entirely safe conclusions, and the same is true of the corresponding statistics of the Twelfth Census of the United States, which groups mill and factory operatives under textiles, also without distinction of the kind of textile manufactured, such as cotton, wool, flax, jute, etc. The Rhode Island statistics for the period 1897 to 1906 include 798 deaths from all causes, and of this number 218, or 27.3 per cent, were from consumption.

In English occupation mortality statistics cotton textile operatives are combined with persons employed in the manufacture of flax and linen, which also to a certain degree impairs their value. Since the proportion of persons employed in linen and flax manufacture is comparatively small, the error is not a very serious one. In the aggregate the English data for 1890 to 1892 include the observed mortality experience of 538,077 occupied males exposed to the risk of death one year, among whom there occurred 7,471 deaths from all causes. The specific death rates have been calculated by divisional periods of life, and an instructive comparison is possible with the corresponding mortality of occupied males generally.

MORTALITY FROM ALL CAUSES AMONG MALES EMPLOYED IN THE MANUFACTURE OF COTTON, FLAX, AND LINEN, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1890 TO 1892, BY AGE GROUPS.

[From Supplement to the Fifty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for cotton, flax, and linen employees.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.55	3.55	+ 1.00	139
20 to 24 years.....	5.07	5.95	+ .88	117
25 to 34 years.....	7.29	7.17	- .12	98
35 to 44 years.....	12.43	12.83	+ .40	103
45 to 54 years.....	20.66	24.68	+ 4.02	119
55 to 64 years.....	36.66	52.55	+15.89	143
65 years or over.....	102.32	159.08	+56.76	155

The mortality of English cotton-mill operatives, including workers in linen and flax, is shown by the preceding table to have been excessive at all ages, except 25 to 34. This is probably the result of the very heavy death rate prevailing at ages under 20, and the comparatively high death rate at ages 20 to 24. The excess in the general mortality of persons employed in this occupation becomes more apparent at ages 45 to 54, and decidedly pronounced at ages 55 or over. It requires no very extended analysis of the causes of death among this class of operatives to establish the fact that the excess in the general mortality is primarily the result of a high death rate from consumption and other respiratory diseases. The facts, as far as they

are obtainable from the published reports, are set forth in tabular form below, which shows the mortality rate by divisional periods of life from consumption and from respiratory diseases other than consumption among cotton mill operatives, including linen and flax, and among occupied males generally, first from consumption and second from other respiratory diseases:

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG MALES EMPLOYED IN THE MANUFACTURE OF COTTON, FLAX, AND LINEN, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1890 TO 1892, BY AGE GROUPS.

[From Supplement to the Fifty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for cotton, flax, and linen employees.			Death rate per 1,000 for all occupied males.	Death rate for cotton, flax, and linen employees.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.70	1.26	+0.56	180	0.26	0.44	+0.18	169
20 to 24 years.....	1.95	2.86	+ .91	147	.61	.80	+ .28	146
25 to 34 years.....	2.63	2.91	+ .28	111	1.13	1.24	+ .11	110
35 to 44 years.....	3.43	3.24	- .19	94	2.50	3.41	+ .91	136
45 to 54 years.....	3.38	4.09	+ .71	121	5.15	7.71	+ 2.56	150
55 to 64 years.....	2.65	3.11	+ .46	117	10.32	18.19	+ 7.87	176
65 years or over ..	1.50	2.50	+1.00	167	25.91	53.19	+27.28	205

These earlier statistics have been included, since they will prove useful for reference and comparison with the more recently published occupation mortality data for males employed in this industry, which will subsequently be referred to in detail. The preceding table shows that the mortality from consumption among cotton workers was excessive at all ages except the period 35 to 44, when, however, the rates quite closely approach the average for occupied males generally. More significant are the pronounced differences in the mortality of cotton workers from respiratory diseases other than consumption, which is excessive at all ages and which probably includes some deaths from fibroid phthisis recorded as chronic bronchitis or chronic pneumonia, or under some similar term.

More trustworthy and conclusive are the corresponding statistics of cotton manufacture for England which have been recently made public for the three years ending with 1902 and which are referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

In the term of life from the twentieth to the forty-fifth year the death rates of cotton workers are below the standard for occupied and retired males; but at other ages they exceed it. In the main working

time of life the comparative mortality figure for the industry is 1,114, or 11 per cent above the standard. Cotton operatives experience an excess of about one-fourth in the mortality from nervous and respiratory diseases, and also a slight excess from cancer, phthisis, circulatory diseases, Bright's disease, and suicide. Their mortality from influenza is less than the normal; they appear to be but slightly addicted to intemperance, and their mortality figure from accident is little more than half the standard.

The English occupation mortality statistics for males employed in cotton manufacture during the three-year period 1900 to 1902 include 5,710 deaths from all causes. Of this number of deaths 1,093, or 19.1 per cent, were from consumption, and 1,084, or 19.0 per cent, from respiratory diseases other than consumption; of the deaths from all causes 2,177, or 38.1 per cent, were therefore from diseases of the lungs and air passages. In the following table a comparison is made of the mortality from all causes among men engaged in cotton manufacture with that of occupied males generally, and the result indicates an excessive mortality at ages 45 or over, and also a slightly excessive mortality at ages 15 to 19. At ages 20 to 44 the mortality among cotton workers was somewhat less than for all occupied males.

MORTALITY FROM ALL CAUSES AMONG MALES EMPLOYED IN COTTON MANUFACTURE, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for male cotton workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.68	+ 0.24	110
20 to 24 years.....	4.41	4.32	- .09	98
25 to 34 years.....	6.01	5.48	- .53	91
35 to 44 years.....	10.22	9.61	- .61	94
45 to 54 years.....	17.73	20.46	+ 2.73	115
55 to 64 years.....	31.01	41.15	+10.14	133
65 years or over.....	83.39	127.31	+33.92	144

In the table which follows the mortality from consumption and from respiratory diseases other than consumption among men employed in cotton manufacture is compared with the normal mortality for all occupied males from these diseases by divisional periods of life. The comparison shows that the mortality from consumption was above the average at all ages except 25 to 34, when the mortality was practically the same for cotton workers as for all occupied males. The excess in the mortality is quite pronounced at ages 45 or over. The mortality from other respiratory diseases was somewhat excessive at all ages except 35 to 44, but the excess was most pronounced at ages 20 to 24 and at 45 or over.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG MALES EMPLOYED IN COTTON MANUFACTURE, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for male cotton workers.			Death rate per 1,000 for all occupied males.	Death rate for male cotton workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.82	+0.28	153	0.24	0.25	+0.01	104
20 to 24 years.....	1.55	1.65	+ .10	106	.48	.60	+ .12	125
25 to 34 years.....	2.03	2.01	- .02	99	.77	.81	+ .04	105
35 to 44 years.....	2.74	2.89	+ .15	105	1.66	1.51	- .15	91
45 to 54 years.....	3.04	3.66	+ .62	120	3.32	4.18	+ .86	126
55 to 64 years.....	2.16	2.76	+ .60	128	6.54	9.80	+ 3.26	150
65 years or over...	1.11	2.13	+1.02	192	17.77	28.50	+10.73	160

Summarizing these observations and statistical data, they indicate a somewhat excessive mortality, particularly at the more advanced ages, undoubtedly due to the inhalation of vegetable fiber dust, the health-injurious effects of which are more slow to reveal themselves than when the inhalation is of metallic and mineral dusts. The statistics available suggest the necessity of a thorough and qualified investigation to determine with more accuracy the facts regarding the mortality of cotton workers.

TEXTILE SPINNERS.

Spinning, in cotton and woollen manufacture, is peculiarly an employment of women and children, who constitute the large majority of persons employed in American and foreign mills. It is true, as pointed out in the census report on cotton manufacture, that in proportion as the speed of machinery increases women and children are displaced by men,^(a) but even under modern conditions out of 55,488 frame spinners employed in the manufacture of cotton textiles only 10,709 were men, or 19.3 per cent. Of the remainder, 25,701 were women and 19,078 children. Mule spinners are almost invariably men, but the number of mule spinners in the cotton industry is not large, and in 1905 was only 4,866, of whom 3,691 were employed in the New England States.^(b) In spinning the amount of visible dust is not considerable, but large quantities of fly or flue are produced during the spinning, twisting, and drawing operations, which rapidly accumulate on and about the machines, requiring constant cleaning and dust removal, for which practically no effective provision is made in most of the American mills at the present time. The

^a Census of Manufactures, 1905, Part III, p. 30.

^b Census of Manufactures, 1905, Part III, p. 50.

employment has the serious disadvantage of a comparatively high and moist temperature, which, according to Arlidge, during the summer months induces "exhaustion, sweating, and debility; results the more felt because spinning entails nearly constant standing, or slight movements to and fro to follow the 'mule frames.'" Arlidge observed, further, that "what renders the spinning rooms more insaniary than they would be otherwise, considering their general spaciousness, is that the temperature is maintained night and day, and that all inlets for air are kept carefully closed. In consequence, there is not the necessary renewal of air for healthy breathing. Moreover, in such close rooms the operatives acquire a particular sensitiveness to currents of air and to change of temperature, and are themselves opposed to most attempts at ventilation. Happily, these remarks are not so generally applicable as they were formerly, for the better recognition of what constitutes ventilation, together with the skill of engineers, has worked a great reform in the sanitary state of spinning rooms." The mortality from consumption among spinners is known to be high, both among men and women, and, no doubt, in a large measure this is the direct result of the employment. The degree of consumption frequency among spinners, however, is possible of a material reduction under satisfactory conditions of light, temperature, and ventilation. Modern American cotton mills, especially in the South, are in many respects more hygienic than the old type granite structures typical of New England. Compared with certain foreign countries, the mortality of cotton spinners, at least, would appear to be somewhat lower in the United States, due, no doubt, largely to the more recent development of the industry and the generally more satisfactory conditions of labor and life in this country.

The only really trustworthy general mortality statistics of spinners are the returns for Blackburn, England, prepared annually under the direction of Dr. Alfred Greenwood, the medical officer of health. An admirable analysis of these returns by Mr. F. S. Crum was published in the New York Medical Record for August 11, 1906, and from the tables there presented are extracted the following comparative death rates of spinners and weavers, including separately the rates for consumption and for other respiratory diseases:

MORTALITY OF SPINNERS AND WEAVERS IN BLACKBURN, ENGLAND,
1899 TO 1906.

Age at death.	Death rate per 1,000 from all causes of—		Death rate per 1,000 from consumption among—		Death rate per 1,000 from other diseases of the respiratory system of—	
	Spinners.	Weavers.	Spinners.	Weavers.	Spinners.	Weavers.
15 to 24 years.....	5.3	3.7	1.3	1.1	0.8	0.4
25 to 34 years.....	7.7	4.8	2.5	2.4	1.9	.7
35 to 44 years.....	10.3	9.1	2.8	1.9	2.2	1.8
45 to 54 years.....	25.7	14.9	2.4	1.8	7.9	4.8
55 to 64 years.....	43.7	44.7	.8	2.8	17.8	15.1
65 years or over.....	177.7	130.5	1.8	.9	42.8	35.6

In the State of Rhode Island, during the five years ending with 1906, there were recorded only 71 deaths of male spinners, and of this number 18, or 25.4 per cent, were from consumption, and 5, or 7 per cent, were from other respiratory diseases. It is quite probable, however, that the actual mortality was greater than the recorded on account of the difficulty in securing, without special inquiry, accurate information as to decedents' exact occupation at the time of death.

The recorded industrial insurance mortality statistics of spinners include 189 deaths from all causes, of which 56, or 29.6 per cent, were from consumption. Of the mortality of spinners from respiratory diseases other than consumption, 17 were from pneumonia, 6 from asthma and bronchitis, and 5 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 44.4 per cent of the mortality of spinners was from diseases of the lungs and air passages. Spinners, as grouped for the purpose of this investigation, include spinners of textiles generally, but chiefly those in the cotton industry. Because of the fact that the large majority of spinners are women, the mortality experience with this class of labor is comparatively small. The excess in the consumption mortality of spinners is more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. Although the consumption mortality was excessive at all ages under 55, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 50 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of spinners in detail is set forth in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG SPINNERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for spinners from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of spinners, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Spinners.	Males in registration area, 1900 to 1906.
15 to 24 years.....	28	13	46.4	27.8
25 to 34 years.....	38	19	50.0	31.3
35 to 44 years.....	36	16	44.4	23.6
45 to 54 years.....	27	7	25.9	15.0
55 to 64 years.....	37	1	2.7	8.1
65 years or over.....	23	.....	.....	2.7
Total.....	189	56	29.6	14.8

The preceding statistical data, including the industrial insurance mortality experience, confirm the conclusion that the mortality of spinners from consumption is considerably above the average throughout practically the entire active working period of life, but in particular between the ages of 15 and 54, inclusive.

TEXTILE WEAVERS.

Weaving is a more arduous occupation than spinning, but apparently the health conditions affecting this employment are more favorable than the corresponding conditions in the spinning rooms. Spinning attracts the less physically strong or those who because of their frail physique would be predisposed to consumption. This, in part, no doubt, accounts for the difference in the mortality rates of the two employments. The census of 1905 returned the number of weavers of cotton goods in the United States as 98,807, but of these 50,559 were women and young persons.^(*) Arlidge describes the conditions in weaving rooms, with special reference to health-injurious circumstances, in part, as follows:

Weaving sheds are of vast dimensions, and, in some instances, hold 1,000 looms. The noise in the winding and spinning rooms is very great, but in the huge weaving sheds it is almost deafening. At the same time, the places are excessively hot; and the air is charged with moisture, and, when there is heavy sizing, with dust of china clay, the same material as used in making pottery. Added to these insanitary circumstances are bodily exhalations of the workers—breath and perspiration. The heat and moisture are necessary to prevent the undue breakage of the yarn in the act of weaving, and the more so where the yarn is of inferior quality and is heavily sized, to make it marketable.

Conditions in American weaving rooms are probably somewhat better than in England, especially on account of the fact that the sizing used in the preparation of the warp is, as a rule, of common starch, sago, or some similar vegetable compound, instead of china clay dust, which is in common use in English factories. The weaving rooms in American mills are usually high-studded but rarely as well ventilated as would be necessary to secure the best conditions favorable to health and life. Effective artificial ventilation is the exception rather than the rule. The conditions as to temperature and artificial humidity are probably less favorable in weaving rooms than in spinning rooms, but in the latter a considerable amount of fly or dust is generated during the spinning processes. English mortality statistics of weavers indicate a lesser liability to consumption and other respiratory diseases among this class than among spinners, but it must always be taken into account that such statistics are likely to

^(*) Census of Manufactures, 1905, Part III, p. 50.

err seriously with advancing age when it becomes very difficult to account for those who have retired from the textile industry to follow other and less arduous employments. It is open to question whether the recent English attempt to account for the entire mortality of all the occupied and retired in certain specified trades really has been a success and warrants the conclusions arrived at.

In the analysis by Mr. F. S. Crum of the mortality of spinners and weavers a comparison is made of the death rate of English weavers with the general average death rate in the registration area of the United States, which is reproduced here to emphasize how even an admittedly imperfect registration of the mortality of this trade indicates a decidedly high death rate among this class:

PROPORTIONATE MORTALITY OF **WEAVERS** FROM CONSUMPTION AND OTHER RESPIRATORY DISEASES, BLACKBURN, ENGLAND, 1890 TO 1906.

Age at death.	Per cent of deaths due to consumption among weavers in—		Per cent of deaths due to other respiratory diseases among weavers in—	
	Blackburn, England.	United States registration area, 1900.	Blackburn, England.	United States registration area, 1900.
15 to 24 years.....	28.9	30.9	10.8	9.5
25 to 34 years.....	50.6	32.4	14.0	10.4
35 to 44 years.....	20.8	22.6	19.3	12.2
45 to 54 years.....	12.1	13.3	22.0	13.4
55 to 64 years.....	6.4	7.6	23.7	14.6
65 years or over.....	.6	2.9	25.5	14.7

The Rhode Island statistics of mortality by occupation only record the deaths of weavers, beginning with the year 1901. During the period 1901 to 1906 the recorded mortality of weavers from all causes was 259, and of this number 67, or 25.9 per cent, were from consumption and 30, or 11.6 per cent, from other respiratory diseases. Of the total mortality 97, or 37.5 per cent, were from diseases of the lungs and air passages.

The recorded industrial insurance mortality statistics of weavers include 915 deaths from all causes, of which 254, or 27.8 per cent, were from consumption. Of the mortality of weavers from respiratory diseases other than consumption 78 were from pneumonia, 10 from asthma, 18 from bronchitis, and 13 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 40.8 per cent of the mortality of weavers was from diseases of the lungs and air passages. The number of deaths of weavers under consideration is exceptionally large and strictly representative of this important occupation. It is difficult, however, to determine the kind of dust exposure to which this class of labor was most

subject, since the term is a general one, including employments in every branch of textile manufacture. The excess in the consumption mortality of weavers is more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 53.4 were from consumption, against a normal expected proportion of 31.3. If the proportionate mortality of weavers is compared with the corresponding mortality of spinners, it appears that while for spinners the proportion was 46.4 per cent at ages 15 to 24 it was 39.8 per cent for weavers; at ages 25 to 34 the proportion was 50.0 per cent for spinners, against 53.4 per cent for weavers; at ages 35 to 44 the proportion was 44.4 per cent for spinners, against 38.1 per cent for weavers, and at ages 45 to 54 the proportion was 25.9 per cent for spinners, against 25.7 per cent for weavers. At ages 55 or over the numbers for spinners are too small for an entirely safe conclusion. The comparison would warrant the opinion that the occupation of spinners is somewhat more exposed to health-injurious conditions, resulting in a somewhat higher proportionate consumption mortality from this employment. The analysis of the consumption mortality of weavers in detail is set forth in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG WEAVERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for weavers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of weavers, 1897 to 1906 due to—		Percent of deaths due to consumption among—	
	All causes.	Consumption.	Weavers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	106	43	39.8	27.8
25 to 34 years.....	174	93	53.4	31.3
35 to 44 years.....	155	59	38.1	23.6
45 to 54 years.....	144	37	25.7	15.0
55 to 64 years.....	137	15	10.9	8.1
65 years or over.....	197	7	3.6	2.7
Total.....	915	254	27.8	14.8

The preceding observations and mortality statistics, including the insurance experience, confirm the conclusion that the mortality of weavers from consumption is excessive at all ages, but in particular at ages 15 to 64, or throughout the entire period of the active working lifetime of persons employed in this occupation.

MANUFACTURE OF HOSIERY AND KNIT GOODS.

The manufacture of hosiery and knit goods has within recent years attained to very large proportions in the United States, giving employment to 103,715 wage-earners in 1905, of whom 66.4 per cent were women and 9.3 per cent children and young persons under 16 years of age. The rapid growth of this industry is illustrated by the fact that during the five years ending with 1905 the number of wage-earners increased 24.4 per cent, while the value of the product increased 43 per cent. The number of knitting machines during the same period increased from 69,047 in 1900 to 88,374 in 1905.^(*) About one-third of these are automatic circular hosiery machines, but the amount of dust generated during knitting processes is practically the same, irrespective of the kind of machinery in use. The material used in knitting and hosiery manufacture is chiefly cotton and woolen and worsted yarn, but considerable quantities of shoddy, jute, hemp, silk, and mohair are also used in an endless variety of combinations, which vary widely from year to year, according to the demands of the trade. It has seemed best, however, for the present purpose to include the manufacture of hosiery and knitted goods under the employments exposing chiefly to the risk of vegetable dust inhalation, since over one-half of the material used is cotton or some other vegetable fiber. The health conditions in knitting and hosiery mills conform quite closely to those of cotton and woolen spinning and weaving rooms. The health-injurious effects of the industry are probably most pronounced in the spinning, weaving, knitting, finishing, calendering, and drying rooms, but no qualified investigation has been made to warrant final conclusions.

There are no official vital statistics of hosiery and knit goods manufacture for the United States, and thus far no analysis has been made of the mortality of this class in the cities and towns where the industry is concentrated and where large numbers are employed. The Rhode Island statistics for knitters are not of determining value, since only 8 deaths of male knitters have been recorded during the ten years ending with 1906, but of this small number 5, or 62.5 per cent, were deaths from consumption.

The mortality of hosiery workers in England and Wales is referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, as follows:

The death rates of hosiery workers exceed the standard for occupied and retired males at ages 20 to 25 and 55 years and upward, while at other ages the rates are below the standard. In the main working period of life the comparative mortality figure is 921, or 8 per cent below the standard. The mortality from phthisis exceeds the average

^{*} Census of Manufactures, 1905, Part III, p. 68.

by one-fifth part, and there is also a slight excess from cancer, circulatory diseases, and suicide, whilst from every other cause the mortality is below the standard; the mortality from influenza, from alcoholism and liver disease, from Bright's disease, and from accident, shows a marked defect as compared with the average. (a)

The English occupation mortality statistics for persons employed in hosiery manufacture are of considerable value, since they include 881 deaths from all causes occurring during the three-year period ending with 1902. Of this number of deaths 97, or 11 per cent, were from consumption, and 161 deaths, or 18.3 per cent, from other respiratory diseases, which combined give 29.3 per cent of the mortality from diseases of the lungs and air passages. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is suggestive of conditions in this trade decidedly unfavorable to health and life at ages 55 or over:

MORTALITY FROM ALL CAUSES AMONG MALES EMPLOYED IN HOSIERY MANUFACTURE, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for males in hosiery manufacture.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	1.00	- 1.44	41
20 to 24 years.....	4.41	5.75	+ 1.34	130
25 to 34 years.....	6.01	5.39	- .62	90
35 to 44 years.....	10.22	6.71	- 3.51	66
45 to 54 years.....	17.73	16.10	- 1.63	91
55 to 64 years.....	31.01	35.11	+ 4.10	113
65 years or over.....	88.39	132.12	+43.73	149

The death rates of men employed in hosiery manufacture are below the general average at all ages under 55 except at ages 20 to 24, when, however, small numbers are in part responsible for a possibly accidental fluctuation in the death rate.

In the table which follows the mortality from consumption and from respiratory diseases other than consumption among men employed in hosiery manufacture is compared with the normal mortality of occupied males from these diseases by divisional periods of life. The comparison shows that the mortality from consumption was above the average at all ages under 65 except at 35 to 44. The re-

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. xc.

turns are not entirely conclusive and are possibly impaired by the more or less fluctuating character of the population and the tendency to leave the manufacture of hosiery for other branches of the textile industry. The mortality from other respiratory diseases was below that of all occupied males at all ages under 65.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG MALES EMPLOYED IN HOSIERY MANUFACTURE, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for male hosiery workers.			Death rate per 1,000 for all occupied males.	Death rate for male hosiery workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.60	+0.06	111	0.24	0.20	-0.04	83
20 to 24 years.....	1.55	2.35	+ .80	152	.45	.25	— .22	54
25 to 34 years.....	2.03	2.46	+ .43	121	.77	.70	— .07	91
35 to 44 years.....	2.74	2.48	— .26	91	1.66	.75	— .91	45
45 to 54 years.....	3.04	4.23	+1.19	139	3.32	2.93	— .39	88
55 to 64 years.....	2.16	3.47	+1.31	161	6.54	6.01	— .53	92
65 years or over..	1.11	.79	— .32	71	17.77	27.06	+9.29	152

The recorded industrial insurance mortality statistics of hosiery and knitting mill employees include only 65 deaths from all causes, of which 24, or 36.9 per cent, were deaths from consumption. The excess in the consumption mortality of hosiery and knitting mill employees is clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG HOSIERY AND KNITTING MILL EMPLOYEES, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for hosiery and knitting mill employees from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of hosiery and knitting mill employees, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Hosiery and knitting mill employees.	Males in registration area, 1900 to 1906.
15 to 24 years.....	23	5	21.7	27.8
25 to 34 years.....	22	15	68.2	31.3
35 to 44 years.....	7	2	28.6	23.6
45 to 54 years.....	9	2	22.2	15.0
55 to 64 years.....	3	.....	.....	8.1
65 years or over.....	1	.....	.....	2.7
Total.....	65	24	36.9	14.8

It is found, in summarizing these observations and statistical data, that they do not warrant final conclusions but suggest the necessity of a qualified and extended investigation to determine with accuracy the facts regarding the mortality of this class of labor.

LACE MANUFACTURE.

Lace making in the United States has not as yet attained to considerable proportions, but the perfection of machinery for lace making gives promise of a considerable development of this industry in the United States in the future. The subject has attracted the attention of the Bureau of Manufactures, and a very interesting descriptive report on machine-made lace in Europe was recently published by the Department of Commerce and Labor. According to this report lace making by machinery is an extremely complicated process, with resulting labor conditions quite closely resembling those of hosiery and knit-goods manufacture. No very satisfactory account of the conditions of labor in this industry has been published, with special reference to the different employments, except lace dressing, which is held to be accompanied by serious health-injurious consequences, but chiefly on account of the high temperature under which this process is carried on. In a special report upon lace dressing, by the medical officer of health of the city of Nottingham, England, this process in its relation to health is in part described as follows:

The lace, after having been bleached, and, in some cases, dyed, and then dipped in starch solution, is taken in rough and wet condition to the dressing (or drying) rooms (usually over 100 yards long by 15 to 20 yards wide and 9 to 10 feet high) and there stretched upon horizontal frames to dry. In the case of some fine silk nets, the unstarched fabric is placed upon the drying and stretching frames, and the dressing applied to the stretched material on the frames. The dressing rooms are heated by steam or hot-water pipes, and their temperature usually ranges, in this country, from 75° to 100° F. It is made to vary to suit the requirements of different materials and according to the condition of the external air. In very hot and dry weather, all artificial heat is occasionally dispensed with for cotton goods; but for silk goods, which are reputed to require specially quick drying, artificial heat is always employed, and the temperature of some silk-lace dressing rooms in Lyon (France) is said often to be as high as between 130° and 140° F. The drying process is assisted by large revolving fans placed directly over the drying material.

The Stenter dressing or drying machine calls for special mention, as its use frequently modifies the distribution of hot air in the rooms where it is employed. In this machine, which is used principally for lace curtains, the fabric is carried by an endless chain into an atmosphere heated by multitubular boilers (the air being driven through the steam-heated boiler tubes), and the whole mechanism, with its

contained lace material, is usually boxed in with wooden casing furnished with ventilating openings. In rooms where this machine is in use, the temperature seldom rises above 80° F., except in the immediate neighborhood of these openings and at the feeding end of the machine.

The investigation at Nottingham was a thoroughly qualified inquiry, including a careful consideration of the available vital statistics referring not only to those who had been continuously employed in lace dressing, but also to those who had been casually employed; the number of the latter was found to be considerable. Many of the lace factory employees were interviewed and examined, but the opinion was practically unanimous that lace dressing, even if followed for many years, is not dangerous to health. Many of the employees were found to suffer a good deal from common colds, but such colds did not appear to be of greater frequency than among factory workers in general. The investigation did not disclose any special tendency to phthisis or to other lung diseases among the women, who alone work continuously in the dressing room, and this in the opinion of Dr. Philip Boobyer, the author of the report, was more remarkable, since the majority were of a very poor class, living in poor houses and poor neighborhoods, and many no doubt led irregular and intemperate lives. The result of the investigation was summed up in the statement that—

Probably the strongest argument in support of the contention that lace dressing, as now carried on in Nottingham, is a healthy occupation, is to be found in the fact that large numbers of women have worked at it for very long terms of years continuously, have had good health while doing so, and have lived to advanced old age, either at work or in retirement. I have alluded elsewhere to the question which naturally arises, as to how far the case of these women is to be regarded as an illustration of the survival of the fittest, but up to this point have answered it only by general statements.

Although, as I have said, there are a good many people who have left this work for various causes after having tried it for a time, there are, on the other hand, large groups of those who have taken it up and adhered to it continuously during the whole period of their working lives, and the duration of these has certainly, in the majority of cases, been remarkably long. The only possible inference to be drawn from facts and figures like these is that the work people have established an absolute tolerance of the abnormal atmospheric conditions which exist in the lace-dressing rooms, and that life, and vigorous life, can be maintained to old age under these conditions.

Since lace dressing as carried on in England is practically a woman's employment, males employed in the lace industry generally did not come within the scope of the inquiry. Dr. Boobyer, however, pointed out that the death rate from phthisis among the males was found to be high in contrast to the low death rate from phthisis

among the females, but owing to the smallness of the number of men employed, and the continual fluctuation in this number, the expression of their phthisis mortality by means of a definite rate would, because of this fact, be seriously misleading.

Lace making in its relation to health was considered at some length by Arlidge, who first calls attention to the gradual changes from the rapid displacement of handmade lace by machine-made lace, and the decay of the industry in Nottingham, which, in his opinion, from a purely hygienic point of view was not an unmixed evil on account of the high ratio of phthisis and scrofula observed by him to prevail among those who followed this occupation. He refers to the occupation divisions in machine-made lace, chiefly lace making proper, finishing, and mending, the last named process being subdivided into dressing, gaufering, bleaching, and dyeing. The process of gaufering is, in his opinion, a particularly injurious one to health, chiefly on account of the fact that the machines are heated by gas. He states that—

It is a division of the occupation which is regarded on all hands as very unhealthy, chiefly on account of the very great heat connected with it and, in less measure, of a sickly smell evolved. The "finishing" of cotton lace entails a higher temperature than that of silk lace. The same fact applies when "Paris" dressing is done. The presence of a large surface of moist tissue and the elevation of temperature necessarily imply a more or less humid atmosphere and free perspiration. Fortunately the admission of fresh air is permissible at times from open windows. For the most part finishing rooms are heated by hot water or steam pipes, though in some factories open fires are found in the making-up departments; the air is dry, and the making-up machines, heated by gas or by steam pipes, render it very hot, especially when several of them are situated in the same apartment.

A summary of these conclusions of qualified observers seems to warrant the opinion that dust, in relation to lace manufacture, is reduced to a minimum and apparently is not of a serious consequence to the employees. This opinion is confirmed by English vital statistics, which indicate that the death rates from phthisis are at least not above the average, and at some divisional periods of life they are decidedly below the average of consumption frequency in other branches of textile manufacture.

The most recent English mortality statistics of lace manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General in part as follows:

The number of male lace workers is comparatively small, and it is found that as compared with the standard for all occupied and retired males, the death rates at the several groups of ages fluctuate considerably, being below that standard at ages 20 to 25 and 35 to 55,

and above it at all other ages. In the main working time of life the comparative mortality figure is 950, or 5 per cent below the standard. Lace workers appear to suffer little from influenza and respiratory diseases, and only half the ordinary fatality from accident. They show, however, a marked excess in the mortality from cancer, and the mortality from alcoholism and liver disease as well as from phthisis, from nervous and circulatory diseases and from suicide also exceeds the standard.^(a)

The recent English mortality statistics for lace workers are not quite conclusive and do not warrant an entirely definite opinion as to the health injurious effects of this employment. In the table which follows, a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the comparison shows that the general death rate of lace workers was above the average at ages 15 to 19, 25 to 34, and 55 to 64. Since the number of men employed in this industry is comparatively small the statistical data do not warrant final conclusions.

MORTALITY FROM ALL CAUSES OF MALE LACE WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for male lace workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.58	+0.14	106
20 to 24 years.....	4.41	2.69	-1.72	61
25 to 34 years.....	6.01	6.71	+ .70	112
35 to 44 years.....	10.22	8.88	-1.84	83
45 to 54 years.....	17.73	11.68	-6.05	66
55 to 64 years.....	31.01	32.56	+1.55	106
65 years or over.....	88.39	87.56	-.83	99

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of lace workers from consumption is compared with the normal mortality of occupied males generally, by divisional periods of life. The comparison shows that the mortality from consumption was excessive at the same age periods at which the general death rate was above the normal, but the excess was not very marked and does not warrant a decidedly unfavorable conclusion regarding the possible health-injurious effects of this industry.

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxxviii.

MORTALITY FROM CONSUMPTION AMONG MALE LACE WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for male lace workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	1.13	+0.59	209
20 to 24 years.....	1.55	1.12	- .43	72
25 to 34 years.....	2.03	2.84	+ .81	140
35 to 44 years.....	2.74	2.39	- .35	87
45 to 54 years.....	3.04	2.57	- .47	85
55 to 64 years.....	2.16	2.22	+ .06	103
65 years or over.....	1.11	.74	- .37	67

For a final and entirely conclusive opinion additional information is required, but at present no trustworthy statistical data are available for the United States.

FLAX AND LINEN MANUFACTURE.

The manufacture of flax, hemp, and jute products in the United States is only gradually assuming large proportions, considering the enormous demand for the finished product. The United States Census of Manufactures of 1905 enumerates 24,508 wage-earners employed in this industry, but of this number only 12,343 were adult males, while 10,072 were women and 2,093 children under 16 years of age. As pointed out in a report on this industry by Mr. Edward Stanwood, expert special agent of the census, "Hardly any general class of manufactures is more difficult of treatment, either as a whole or in detail, than that of flax, hemp, and jute. The materials are closely allied, in that they are all vegetable fibers, and in that two and sometimes all three are used in the same establishment and not infrequently introduced into the same fabric. Yet the products are so diverse, ranging from gunny bags and ships' hawsers to fine toweling and sewing thread, that the propriety of embracing all these varied industries in a single class, which seems so evident when materials only are considered, practically disappears." "A list of the products includes yarn and twine made from each one of the three fibers; linen thread; woven fabrics, partly or wholly of linen; rope and binder twine of manila or of sisal, or of the two mixed; gunny bagging, jute burlaps, carpets, rugs, and other minor products."(*)

* Census of Manufactures, 1905, Part III, p. 187.

Of these products the manufacture of cordage and twine and of jute and jute goods will be separately considered, so that it is only necessary here to refer briefly to linen manufacturers and important processes necessary for the manipulation of flax. The linen manufacture is a very limited one in the United States, since the census only enumerates 15 establishments, giving employment to 3,811 wage-earners, and of this number only 1,260, or 33.1 per cent, were adult males. As stated in the census report, "Relatively little attention is given to the preparation of the flax fiber for manufacture, and that which is prepared is adapted only to the coarser processes. Imported material is employed almost exclusively in the spinning of yarns and the weaving of fabrics in the United States. There has never been a successful attempt in this country to produce fine goods at a profit."^a)

The material used in linen and thread manufacture is the fibrous portion of the flax plant, which, in this country, for reasons which do not require to be discussed, is chiefly cultivated for the seed. The preliminary processes are pulling, threshing, and retting, necessary to prepare the flax straw for the breaking and scutching processes. The scutching process, whether by hand or machinery, is an exceedingly dusty occupation, subject, however, to material modification by effective ventilation stacks which carry off much dust which would otherwise pollute the atmosphere of the room. With the subsequent processes begins the linen manufacture proper, and the first operation is called "heckling," which also may be performed either by hand or machinery. Heckling is also an exceedingly dusty process, and the conditions are not much better in the subsequent operation of sorting. Spreading and drawing are intermediary processes, previous to the sliver being taken to the roving frame, after which the fiber is ready for spinning, which for practical purposes conforms to the mule spinning operations in cotton mills, although the amount of dust generated during this process is probably greater. Spinning is followed by reeling, drying, warping, sizing, beaming, and drawing in, previous to the final process of weaving, all of which are operations practically indetical with the corresponding process in cotton manufacture.

Referring to the health-injurious circumstances of particular employments in flax and linen manufacture, Bevan, in his treatise on Industrial Classes and Industrial Statistics of the United Kingdom, gives a very vivid descriptive account, which is reproduced in part as follows:

Heckling, which is performed by girls and boys, is always a very dusty operation, and requires a good deal of continuous labor. In the

^a Census Manufactures, 1905, Part III, p. 191.

report of Bridges and Holmes, it is said that "the ill effects of the heckling efforts upon the boys (technically called machine boys) engaged in it are shown in spasmodic attacks of cough, during which the boy generally holds on to the machine to assist the efforts of coughing; an effort so familiar to workers that a boy who is observed doing so is said to be 'poucey,' from the 'pouce' or dust by which the cough is provoked. This dust is both fibrous and granular, but the latter very largely preponderates. It is for the most part a fine, soft, and palpable powder, proceeding evidently in great part from the putrefying process to which the flax plant has been subjected. Mixed with these organic particles there is, doubtless, a considerable portion of pulverized mud." This peculiar affection is spoken of as being very common in the Belfast mills.^(a)

In the preparation of the flax a separation is made of the short and coarse fiber, which is known as tow and which contains the largest quantity of dust, dirt, and woody fiber. Bevan states that after being sorted tow "is carded just like cotton, except that it is on a rougher scale, and makes infinitely more dust. The tow-carding room is the worst place in the mill, and the clothes of the workers are generally loaded with the dust which floats thickly through the room, notwithstanding the adoption of powerful exhaust fans in the roof or the external walls. What with the dust and the damp from the steam jets, it is the most unhealthy employment in flax spinning; but, though efforts have been repeatedly made to induce the women to wear respirators, it has been without success."

The dusty condition of the workrooms in tow manufacture is not, however, the only objectionable feature in this branch of the industry, for in the practice of wet spinning the rove of the tow is drawn through a trough of warm water, which results not only in an exceedingly warm atmosphere, but also a very damp one, owing to the spray which is sent off from the spindles. Unless atmospheric conditions are regulated with great care the health of employees is seriously affected, particularly in the case of women. The following quotation gives the opinion of Bevan regarding the injurious conditions in the manufacture of flax products:

The flax trade is the most unhealthy, and no person should work in it who has any pulmonary weakness. Doctor Purdon says, in his evidence, that "nearly three-fifths of those that die annually in this trade are taken off by diseases of the respiratory organs. In the preparing rooms, the death rate from chest affections is exceedingly high, being 31 per 1,000, and amongst the hecklers the deaths annually amount to 11.1 per 1,000, amongst the weavers to 9 per 1,000. In wet spinning the children often get their clothes wet with the spray that comes off from the spindles, and on coming out of the hot room with their clothes damp in the evening, it brings on bronchial affec-

^a In this connection reference may be made to the recently published report of the Belfast Health Commission to the Local Government Board of Ireland, p. 95. Dublin, 1908.

tions." The same observer states that the average life of flax carders is 45.7 years, and the average length of time employed 16.8 years; of preparers, average of employment, 28.7; of dressers, average of employment, 16.6. From an analysis of the fiber it seems that 100 parts of flax contain 13 of silica. From the preceding facts it would appear that the Belfast mills are not in that state of sanitary arrangement in which they ought to be. (*)

These statistical references must be used with caution, since they refer to an earlier period, when conditions were less satisfactory than they are at the present time.

The unfavorable conclusions of Bevan regarding the health-injurious conditions in flax and linen manufacture are fully sustained by numerous investigations which have been made during the last fifty years. The earliest qualified inquiry was made by Doctor Greenhow, and was included in the privy council's medical report for 1860. Doctor Greenhow's report is of special value in that attention is called to the differences in the health-injurious quality of different kinds of flax dust, and from his observations the following extract is made:

Of the several processes carried on in flax mills, hackling, carding, and line preparing are more or less dusty, so that the atmosphere of the rooms in which they are going on is loaded with dust in proportion to the quality of the flax that is being manufactured and the means employed to prevent the dispersion of the dust into the air and its inhalation by the operatives. Several varieties of flax, named from the places whence they come, are manufactured in this country. The most common are the Dutch, Baltic, Irish, French, and Flemish, which yield dust in the process of manufacture in the order in which they have been named, the Dutch being the most, the Flemish the least, dusty. Flax is also imported from America and India, both of which varieties are said to be very dusty. There are, moreover, several varieties of each kind of flax which differ materially from one another; and it is said that, independently of other circumstances, the mode of preparing the flax causes a difference in the dustiness of the article when it comes to be manufactured, that which has been prepared by exposure to rain upon the grass being less dusty than such as has been steeped in water. The manufacture of the refuse from the hackle, called tow, which is spun into coarser material, is likewise attended by much dust. The danger to health will differ in different manufactories, according as the least or the most dusty kind of flax is manufactured. Several operatives asserted that they had not suffered sensibly in health from their occupation until they worked in Dutch flax, when the inhaling of the dust soon caused bronchial irritation. Of the several above-named processes, hand hackling is the most pernicious; this process has now been partially superseded by machine hackling, which, though still often injurious to the health of the operatives, is decidedly less so than the former. There is likewise a considerable quantity of dust

* Bevan's *The Industrial Classes and Industrial Statistics*, Volume on Textiles and Clothing, p. 44.

given off in the processes of carding and line preparing, from which the operatives suffer in proportion to its amount.

After emphasizing the great value of an effective system of ventilation, Greenhow includes a discussion of the pathology of dust inhalation in flax and linen factories, which is one of the most valuable references on the subject, and which, in part, reads as follows:

The effects of exposure to the dust of flax are manifested upon the mucous membranes. The stomach is very apt to become deranged by the dust swallowed, and hence the flax operatives, more particularly the hacklers, often suffer from dyspepsia, and are sallow and look sickly; the eyes often become sore, the margins of the eyelids being swollen and inflamed, and the sight is said occasionally to become impaired. But the most serious effect is produced on the mucous membrane of the air passages; oppression of the chest, followed by dyspnoea, cough, and eventually by expectoration, are ordinary results of inhaling air charged with the dust of flax. Epistaxis is an occasional, and hæmoptysis a very frequent consequence of the same cause. It is remarkable that dyspnoea, sometimes of an asthmatic character, often long precedes the accession of cough and expectoration, or perhaps, more properly speaking, the cough and expectoration are in the beginning too slight to attract the notice of the sufferer, whilst the dyspnoea reminds him of its presence whenever he attempts brisk locomotion. As has already been said, many of the flax operatives forsake the occupation at an early age on account of the injurious influence it exercises over the health; but though this is true, the injury to health is commonly very gradual, and constant discomfort and serious disease only become established toward middle life, men employed in any dusty department of the manufacture rarely attaining the age of 45 or 50 years without suffering more or less severely from bronchial disease.

Efforts to induce workmen and women to use respirators had been a failure, although out of 107 persons medically examined 79 were suffering from some degree of bronchial irritation, ascribed to the unhealthy nature of the employment. While some had attained to quite advanced age, Greenhow points out that—

Notwithstanding that men at ages so advanced as 60 years and upward are sometimes found working as hand hacklers, the attainment of this age must, from the all but universal statements of both employers and operatives, be deemed exceptional. It was stated by manufacturers, foremen, overlookers, and the operatives themselves that working in the more dusty departments of the manufactory rarely fails to make itself felt toward middle life, few persons being able to work in an atmosphere loaded with the dusty particles for twenty years continuously without sustaining serious injury to health. The health of the women employed in the line-preparing room of another factory was inquired into in the manner adopted with regard to the hacklers, already mentioned. It is always difficult to obtain direct evidence from female operatives; but the inquiry showed that all those who had worked for a considerable length of time in this branch of manufacture were asthmatical, and that several of them had suffered from hæmoptysis. The operatives employed in the

carding rooms, unless the machines be properly protected to prevent the dispersion of the dust, frequently labor under habitual dyspnoea, cough, and expectoration; and it is especially in the carding rooms that the operatives are accustomed to tie up their mouths to prevent them inhaling the dust. The effect on a healthy stranger of entering these rooms is most unpleasant; the dust floating in the atmosphere irritates the nasal and bronchial passages, producing sneezing and a sense of oppression in the chest, which do not cease until some time after the visitor has left the apartment. The manager of a large factory asserted that remaining for any continuance in one of the carding rooms invariably produced in him, for a time, all the symptoms and sensations of catarrh. (a)

While the observations of Greenhow pertain to an early period, they apply to present-day conditions, although some improvement has been brought about in the meantime as the result of rational factory legislation. The continuous observation of actual conditions and the frequent qualified inspections made by medical inspectors of flax and linen factories in the United Kingdom have warranted from time to time modifications in the rules governing the conditions of employment, and these were finally amended in 1906 with special reference to processes of spinning and weaving flax and tow and the processes incidental thereto. Among other provisions, it is required that "in every room in which roughing, sorting, or hand hackling is carried on, and in every room in which machine hackling, carding, or preparing is carried on, and in which dust is generated and inhaled in a quantity calculated to cause injury to the health of the employees, a sufficient exhaust should be provided to insure that the dust is drawn away from the workmen at or as near as possible to the point at which it is generated." These regulations governing flax and linen manufacture in the United Kingdom at the present time were carried into effect upon the results of a special investigation made by Hamilton P. Smith, one of His Majesty's superintending inspectors of factories, of the conditions of work in flax and linen mills as affecting the health of operatives employed therein, and from which, in part, the following is quoted, with special reference to the dust problem.

In roughing, sorting, and machine and hand hackling rooms, and in all preparing rooms, the source of danger to health lies chiefly in the fact that large quantities of dust of an injurious nature are generated in the processes of manufacture, and accumulated testimony shows that the workers suffer in health. The raw material after leaving the scutch mill is subjected to the process of combing, laying parallel, and sorting the fibres of flax. This is done partly by hand and partly by machinery. Taking a rough handful or strick of rough flax, the operative by a swinging motion dashes the fibers onto the vertical needles forming the rougher or hackle. The

^a Privy Council Medical Report, 1860, pp. 148-152.

fiber is drawn through these teeth, separating inferior and short fibers from the better ones and leaving "tow" as the residual. The subsequent processes of hand hackling and sorting are, so far as our purposes are concerned, practically the same. The amount of dust varies according to the condition of the material, but in all much of an injurious nature is given off.^a)

The report calls attention to the fact that even at the present time in not a single instance, either in hand-hackling rooms or in machine-hackling rooms, are respirators provided for the use of workmen, and it is suggested that a special rule be adopted making it mandatory that "suitable and efficient respirators shall be provided for the use of the persons employed in roughing, sorting, hand or machine hackling, preparing, and carding." In the inspector's opinion, "Cloth of open texture, made of fine yarn of woolen material, capable of being easily washed, makes an excellent respirator, which can be worn with advantage and without discomfort."

A special investigation into the conditions of work in flax and linen mills, including a thoroughly qualified scientific analysis of the air in flax mills, was made by the Pathological Laboratory of Louvain, the center of the flax industry in France. This investigation proved that the chief constituent of flax dust is mineral matter, the proportionate amount of which varies with the condition of the flax in the different processes, being largest during the process of carding, where it was found to be about four times as large in flax dust as in the outside atmosphere. In addition, it was ascertained that the number and proportion of micro-organisms in flax dust were enormously in excess of the corresponding proportion found in the outside atmosphere, the excess being most pronounced in the dust produced during the hand hackling. The dusty processes in the order of their importance were determined by this investigation to be, first, carding; second, machine hackling; third, preparing; and fourth, hand hackling. Those containing the largest amount of micro-organisms, in the order of their importance, were, first, hand hackling; second, carding; third, machine hackling; fourth, preparing; fifth, spinning; and sixth, reeling. The cause of the injurious nature of the flax dust previously referred to as being very largely of mineral origin was ascertained to be the considerable proportion of silica. The health-injurious conditions in the different rooms were discussed briefly, as follows:

The hackling rooms, both hand and machine, are described as very dusty. Their condition explains the ill health of the workers and the rapid elimination of the workers which takes place. As an additional cause, reference is made (with quotations from the writings of

^a Report upon the Conditions of Work in Flax and Linen Mills, by Hamilton P. Smith, p. 10. London, 1904.

the late Dr. C. D. Purdon, of Belfast, and Doctor Arlidge) to the arduous nature of the work in the machine-hackling rooms, the nature of the work not admitting of a moment's relaxation on the part of the boys employed.

The carding rooms are described as so dusty that the workers appear to work constantly in a mist. It is held to be the most unhealthy occupation from which results a rapid elimination of workers, only those of strong constitution being able to continue at it. Despite this, the unhealthy nature of the work leads to illness frequently and causes others to abandon the work. The average duration of employment is the shortest, and yet the sickness among the workers is the greatest. As possibly causing the dust of the carding rooms to be more injurious than that of any other, reference is made to the metal particles which must be present in the air from the wearing away by friction of the numerous teeth on the carding machines.

Work in the preparing rooms is not considered to be comparable as regards injury to health with those described, and it is pointed out that the figures as to the amount of dust and of micro-organisms present in the air are to some extent vitiated by the fact that carding and preparing are sometimes carried on in the same room.

Reeling is not an injurious occupation; what injury to health there is arises from the humidity of the atmosphere. As a subsidiary cause of ill health in these rooms, is the fact that some of the machines are only capable of being kept in motion by the foot being pressed continually on a bar underneath the machine. This necessitates continuous strain on the muscular system.^(*)

It is a matter of regret that there should be no very conclusive statistical data regarding the apparently very serious health-injurious effects of linen and thread manufacture, and in the absence of such data, especially for the United States, no definite and conclusive opinion would be warranted, although the general observations sustain the conclusion that the labor conditions in this industry are very far from being what they should be to reduce the health-injurious effects of the various employments to a minimum.

HEMP AND CORDAGE MANUFACTURE.

The manufacture of cordage ranks first in the group of miscellaneous textile products, but the industry never has attained to as large proportions in the United States as the home market alone would seem to warrant. With the introduction of machinery the earlier ropewalks have nearly disappeared and conditions otherwise

^{*} Report upon the Conditions of Work in Flax and Linen Mills, by Hamilton P. Smith, appendix 7, pp. 22, 23. London, 1904.

in this employment have undergone material changes. In the ropewalks very common to an earlier period it was the practice, according to Clark, for a man to walk forward and backward, spinning from the hemp around his waist, the twist being imparted from a wheel turned by a boy. Occasionally this practice is still followed at the present time. That the employment was more or less injurious to health is pointed out by Thackrah, and commented upon in Hall's *Journal of Health* in 1832, where it is stated that "ropewalkers suffer inconvenience from their stooping position." In the modern rope factory the twist is imparted by rapidly rotating machinery similar to that used in textile mills generally, making it possible, in the words of Clark, "to spin a rope several thousand feet in length on an upright apparatus occupying but a few square feet."

The descriptive account of the processes and circumstances under which the work is carried on fully sustains the view that a not inconsiderable amount of dust is generated during practically every important process, and without question more or less to the injury of the health of the employees. In discussing the hygiene of this occupation much emphasis is placed upon the specific processes necessary for the successful preparation of the hemp, flax, jute, and other fiber. The subject is referred to in a special report of the Massachusetts state board of health, which is in fact the only really trustworthy account of present-day conditions in this employment. Referring to the manufacture of cordage, twine, carpet yarn, and gunny bags the report states that:

The raw material in various forms comes in bales, which are opened and shaken apart, and the contents are then treated according to their nature. Ordinary jute and hemp, after being shaken out, are run through softening machines, in which they are moistened with an emulsion of oil and water, preparatory to carding. Old rope, gunny bagging and twine are run through machines which pick the fibers apart as a preliminary to other processes. Opening, picking, softening and carding are processes which are exceedingly dusty, and the dust is very irritating to the air passages. The machines which straighten and twist the fibers also give rise to much dust.

Arlidge reports upon the conditions in this employment as follows:

The manufacture of rope and other cordage, formerly carried on after a primitive fashion in "ropewalks," to be found in every town, has become greatly transformed by the introduction of machinery. The great rope-making establishment at Belfast has almost annihilated every ropewalk in Ireland, and seems in a fair way of doing the same thing for England.

The hemp, Russian or Manila, is worked on the same general lines as flax. It has first to be sorted and picked over by girls, hand-roughed and heckled, then carded and a sliver formed, which, after a certain degree of twisting in the roving frames, is submitted to the spinning machines. Both the wet and dry processes are used, the

former principally for the fine yarn. The spun yarn is next taken to large tanks of boiling tar, through which it is slowly passed; this done, the superfluous tar is pressed out between iron rollers, and the yarn afterwards slowly dried. The next business is the twisting of the yarn into strands, on the old ropewalk principle, but by the aid of machines. Cord made from harsh fibers has to undergo a scouring process, prior to sizing and polishing, to fit it for market.

This outline of the processes conveys the general hygienic features of rope making, and at two points at least, viz, in the sorting and the heckling and preparing rooms, the evil of dust arises just as in working flax for linen, in no small degree, with its inevitable consequences to the respiratory organs.

Parry also refers to this occupation, and with special reference to health-injurious consequences incidental to the manufacture of rope or cordage. He points out that—

Hemp is used for ropes, cords, and carpets. The manufacture is much the same as jute. No heckling machines are used. In carpet making the hemp is cut into 12-inch lengths, oiled, and then scutched, carded, and arranged in slivers. The coarse fibers and woody matters are removed, and the rest converted into tow. The slivers are made into large bales, which are again passed through the finishing card, by which fresh tow is separated. Wool is also an important ingredient in this industry. After the hempen foundation is made, short-fibered coarse wool, wound on bobbins, is woven in. All these processes produce dust of hemp and wool; especially is this noticed during the emptying of the tow box, and also during the dressing process, particularly of hemp imported into this country.

The hemp must be sorted and picked over, hand roughed and heckled; then carded and a sliver formed, twisted and spun either by the wet or dry process. In all the early stages, especially sorting and heckling, dust is produced just as it is in linen making.

Contrasting present-day conditions in rope manufacture with the earlier and very primitive processes common to all ropewalks, it is somewhat doubtful whether the change to the almost universal use of machinery has been really a benefit to the occupation. The necessity of walking forward and backward in the old-fashioned ropewalk no doubt was of great value as a matter of mere physical exercise, but no conclusive observations have been made a matter of record which would warrant a definite opinion as to whether conditions at the present time in ropewalks are better or worse than those prevailing at former periods.

The occupation mortality statistics of cordage workers are limited to English sources since no data have been made public regarding the mortality of this occupation in the United States. The number of male wage-earners employed in this industry in the United States in 1905 was 8,646, a sufficient basis for a safe generalization if the necessary mortality data were available. The reference to the mortality of rope makers in the Supplement to the Sixty-fifth Annual

Report of the Registrar-General for the three years ending with 1902 is in part as follows:

The number enumerated in this occupation was only 6,255 at the last census, the number being too small to warrant detailed examination. As compared with the standard for occupied and retired males the death rates fluctuate widely. In the main working time of life the comparative mortality figure is 910, or 9 per cent less than the standard, and under each heading except phthisis they suffer less than the average mortality.^(a)

The recent English statistics for this occupation are quite conclusive of the unfavorable effects of the employment on health at ages 20 to 34 and at 55 or over. In the table which follows a comparison is made of the mortality from all causes of men in this group with occupied males generally, and while the differences are not very pronounced at the earlier ages, they indicate the facts at least with approximate accuracy, and the comparison is, therefore, quite suggestive.

MORTALITY FROM ALL CAUSES AMONG MALE CORDAGE MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for male cordage makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.20	- 0.24	90
20 to 24 years.....	4.41	5.75	+ 1.34	130
25 to 34 years.....	6.01	6.47	+ .46	108
35 to 44 years.....	10.22	7.45	- 2.77	73
45 to 54 years.....	17.73	13.03	- 4.70	73
55 to 64 years.....	31.01	32.49	+ 1.48	105
65 years or over.....	88.30	105.86	+17.47	120

The preceding table is self-explanatory and requires no further comment. A more extended comparison, however, is made in the next table, in which the mortality of cordage makers from consumption is compared with the normal mortality of occupied males, by divisional periods of life. The comparison shows that the mortality from consumption is excessive at ages 20 to 34 and 55 or over, or at the same age period at which the general death rate of cordage makers is in excess of the normal mortality of occupied males.

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxxix.

MORTALITY FROM CONSUMPTION AMONG MALE CORDAGE MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for male cordage makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.24	-0.30	44
20 to 24 years.....	1.55	2.09	+ .54	135
25 to 34 years.....	2.03	2.59	+ .56	128
35 to 44 years.....	2.74	2.48	- .26	91
45 to 54 years.....	3.04	1.18	- 1.86	39
55 to 64 years.....	2.16	3.77	+ 1.61	175
65 years or over.....	1.11	1.50	+ .39	135

The industrial insurance mortality experience of rope makers is limited to 109 deaths from all causes. Of this number, 28, or 25.7 per cent, were from consumption, and 9, or 8.3 per cent, were from respiratory diseases other than consumption. Of the deaths from other respiratory diseases, 6 were from pneumonia, 1 from asthma, and 2 from bronchitis. The following table gives an extended comparison of the mortality of rope makers from consumption with the normal mortality of all males in the registration area of the United States for the seven-year period 1900 to 1906.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG ROPE MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for rope makers from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of rope makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Rope makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	12	6	50.0	27.8
25 to 34 years.....	18	9	50.0	31.3
35 to 44 years.....	17	7	41.2	23.6
45 to 54 years.....	18	6	33.3	15.0
55 to 64 years.....	24	.....	.....	8.1
65 years or over.....	20	.....	.....	2.7
Total.....	109	28	25.7	14.8

These statistics show an excessive mortality from consumption among rope makers, and this excess is specially high at the younger ages. One-half of the total mortality was due to consumption at ages 15 to 24 and 25 to 34, against an expected proportion of 27.8

and 31.3, respectively. While the statistics are limited to comparatively small numbers, the facts are decidedly suggestive of health-injurious conditions in the rope-making industry.

The observations and statistical data regarding the mortality of cordage makers, while not entirely conclusive, indicate with at least approximate accuracy the high degree of consumption frequency at ages 20 to 34 and at 55 or over. It is quite probable that changes in occupation affect the official vital statistics of this trade to a sufficient extent to understate the true effect of the employment on health. There would therefore appear to be unfavorable conditions in this employment, doubtless largely due to the exposure to vegetable fiber dust, resulting in a comparatively high degree of consumption frequency among the employees.

MANUFACTURE OF JUTE AND JUTE GOODS.

The manufacture of jute and jute goods in 1905 gave employment to 6,083 wage-earners, but of this number only 2,437 were men, while 3,083 were women, and 563 were children under 16 years of age. (*) The industry is practically new in the United States, and as yet only a beginning has been made in its development, but it is significant that there has been an increase of 50 per cent in the number of wage-earners employed in the manufacture of jute and jute goods during the five years ending with 1905. No vital statistics have been published for this industry as it is carried on in the United States, but some reference will subsequently be made to the official statistics of Scotland, where the industry has attained to very considerable proportions.

A brief description of jute manufacture was included in Bevan's account of the manufacturing industries of the United Kingdom, and while the description is of somewhat early date it applies to present-day conditions, which in the meantime have not undergone a material change:

Formerly jute used to be spun as flax, which it resembles in fiber, though much coarser. It was heckled, so as to get as much as possible of the fine fiber, and separate it from the coarse. The latter, however, so greatly predominated that it was found to be a useless expense, and it was, therefore, treated like tow, and placed at once in the carding engine. As it is even coarser than tow, one would naturally think that more dust would arise, and that the trade would surpass the flax trade in unhealthiness; but this is not so, owing to the necessity for saturating the jute with oil, so as to make the coarse and brittle fibers flexible. Its very roughness, therefore, has proved a sanitary safeguard to the workers.

Bevan enumerates 20 subdivisions of labor in jute manufacture, but he does not enlarge upon the health-injurious conditions inci-

* Census of Manufactures, 1905, Part III, p. 190.

dental to the different employments. On the whole, however, the subdivisions of labor in jute manufacture correspond to those in textile manufacture generally. The most serious factor injurious to health in jute manufacture is the dust problem, which under most favorable circumstances, however, is subject to material modification. The dust of jute under the microscope, according to Oliver, shows "vegetable fibers which are often torn and ragged and therefore with difficulty detached from the bronchial mucous membrane."

The hygiene of this employment has been discussed by various authorities, and an excellent account of the conditions affecting the health of persons employed in jute manufacture in Dundee, Scotland, was contributed to Oliver's "Dangerous Trades," by Mr. Harry J. Wilson, one of His Majesty's inspectors of factories, from which in part the following extracts are made, emphasizing the more dusty processes of this occupation:

The first operation in the process of the manufacture of jute consists in cutting the binding ropes of the bale and opening out the hard, compressed material. This is invariably done by hand, and immediately afterwards the fiber, still in a compressed state, is passed through between four heavy deeply-fluted rollers intersecting each other, which open the material somewhat and facilitate its disentanglement, before it is placed on the feeding table of the softener. During these processes, while the fiber is in a dry condition, a considerable quantity of dust is shaken out, much of it being of a gritty nature and consisting largely of fine particles of the sand or mud in which the plant grows. The latter impurities adhere to the rooty portion of the plant, but becomes dispersed when the fiber is shaken out and disturbed. It is in this dust that tetanus spores have been found in very considerable quantities. * * * As matters at present stand, the preparing operations in jute factories are much more dusty than subsequent processes, but the particles thrown off in carding, drawing, and rove spinning are more of a light, fluffy nature, and prove less irritating to the respiratory organs than the gritty dust evolved in handling the dry jute. After the material has been effectively softened, and while in a slightly moist condition, it is fed into the "breaker" card. Here, owing to the splitting and combing action of the rapidly-running card teeth, many rooty particles and other impurities are removed, but the heavier matter falls below the machines, from which it is taken away periodically, so that only the lighter dust rises and is breathed by the operators.

The operations subsequent to carding evolve little dust relatively, but owing to the excessive speed of spinning-frame flyers and the friction on the yarn, very light, fluffy particles are continually rising in spinning rooms, so that the atmosphere becomes charged with extremely fine portions of fiber. All horizontal surfaces and the clothing and hair of the workers in these departments soon become coated with this dust.

The dirtiest and most objectionable processes in the manufacture of the material are undoubtedly those of preparing and spinning. The remuneration of the operatives in these departments is consider-

ably less than that earned by the weavers. Thus a distinctly lower class of employees engage in the former processes, the more self-respecting taking up weaving as a means of livelihood.

Where the finer qualities of fiber are treated, the amount of dust evolved is comparatively small, and the factories fairly clean; but in the coarser varieties it becomes excessive and the whole premises assume a dirty and objectionable aspect. It may be of interest to observe here that many women engaged in the preparing and spinning operations of jute manufacture habitually snuff, presumably to rid the nostrils of dust. The custom is rarely observed among women outside Dundee.

The prevention of the dispersal of dust in carding and spinning is extremely difficult, for it appears to rise, more or less, from the fiber, wherever it is sufficiently disturbed, and from any number of points, even in one room. Exhaust fans, however, when placed immediately above the softening machines and properly erected, undoubtedly remove much of the fine, gritty particles shaken out of the raw material, and where a hood is arranged above the exact seat of dust production and communicates with a fan, there is little to complain of.

This particular dust from the raw material is most irritating to breathe, and is presumably injurious, but fortunately few persons in any one mill come in contact with it.

To quote further, the following remarks refer to the high temperatures and other conditions injurious to health in jute spinning rooms:

Unquestionably the high temperatures of spinning rooms are distinctly harmful, perhaps more so than is usually imagined. In fact, the writer, from close observation of operatives in various parts of the country and in dissimilar industries exposed persistently to warm atmospheres, is of opinion that a general lowering of the health (in certain instances marked) very frequently follows such employment. The effects of constantly breathing warm air, quite apart from the liability to chills which such atmospheres engender, are worthy of closer study and scientific investigation. Certainly exposure to great radiated heat, if the air is not particularly warm, does not affect workmen in a similar manner.

The opinion of Wilson, based upon personal investigation, is to the effect that the weaving of jute is apparently a healthy occupation, judging from the general appearance of the operatives. Most of these operatives are women, including sack sewers, who as a rule present a ruddy and robust appearance. The disease liability of jute workers employed in spinning and preparing rooms to pulmonary diseases is also discussed by Wilson, who incidentally comments upon other factors injurious to health as follows:

Investigations reveal a predisposition among factory workers, and particularly those employed in spinning and preparing rooms, to develop respiratory troubles, broncho-pneumonia, chronic bronchitis, and pulmonary emphysema being the most prominent. There is also a singularly large number of patients admitted to the local infirmary suffering from lobar pneumonia. Rheumatism is an extremely common ailment, and can be partially accounted for by the great variations of temperature which operatives have frequently to withstand.

Multiple tuberculous lesions are frequently observed in the children of the poorer operatives, and thus one finds from time to time young persons at work with portions of the hands amputated on account of scrofulous or tuberculous diseases of the bones. Slight deafness is widespread among jute operatives, but other textile workers may be afflicted in a similar degree. The excessive noise of jute-weaving looms and the persistent loud hum of spinning frames presumably account for much of this. The looms, owing to their large size and the weight and high speed of the shuttles, are particularly noisy. The possibility of the dust inducing the formation of an obstruction with the waxy secretion of the ear is not excluded. Indeed, the fine light particles of fiber readily accumulate in the external auditory canal.

A hoarseness or huskiness of voice is met with frequently, and is especially marked in preparing and spinning operatives. Whether this is due to overstraining of the voice, shouting above the noise of the machinery, or to dust irritation of the vocal chords has never been clearly demonstrated. Anæmia in its commonest forms is a frequent ailment among all the operatives, but doubtless careless and injudicious feeding contributes to this condition of health.

Wilson describes the occurrence of "mill fever," so called, which no doubt contributes in a measure toward a predisposition to respiratory and tubercular diseases, as follows:

An illness locally known as "mill fever" attacks about one-fourth of the persons who commence labor in factories for the first time. The symptoms make their appearance a few days after work is started and take the form of one or more of the following: Headache, backache, lassitude, thirst, and slight fever. The attack lasts about from three to four days and yields to antifebrile medicines, followed by tonics. It has been observed that the patients are usually young people and are frequently of weak constitution or badly nourished.

In summing up his conclusions this authority calls attention to the difficulty of differentiating with accuracy between the health-injurious effects properly to be charged to the industry and the effects of poor feeding and bad housing, which no doubt are of considerable importance in Dundee, since the low physical and social condition of the operatives in jute factories is admitted to be a marked feature of the industry. In conclusion, Wilson refers to the health conditions in jute manufacture in East India, where the industry has developed to large proportions, stating that: (*)

The reports of the inspectors of jute mills in East India show that the industry is considered there to have no particularly deleterious effects on health. The mills, however, are built with very high roofs and are largely open to the sky. The climate permits of this, and accordingly the ventilation gives no trouble. Another fact has to be borne in mind in comparing Indian operatives with those employed at home. The former are migratory, only remaining a year or two at the industry, and, presumably, insufficient time is given for any in-

* Mention may also be made here of a recently published report of the East India Factory Labor Commission, Vol. I, Parliamentary Paper CD-4292. London, 1908.

jurious effects to betray themselves; whereas in Scotland the bulk of a lifetime is spent by a worker in a jute factory.

The conclusions of Wilson are fully sustained by other qualified observers, and an account by Arlidge of this employment is included in this review of qualified medical opinions regarding the health-injurious conditions in this industry:

In general principle the processes resemble those in use in making linen, but as the fibers of jute are coarser, longer, and more brittle than those of flax slight differences exist in the mechanical operations. Hackling is, of recent years, not employed, but the jute is at once sent to the carding machine. But what would be a most dusty and injurious operation is rendered comparatively harmless by the previous profuse sprinkling of the jute with water and train oil, for the purpose of rendering the fibers more flexible. This preparatory moistening and softening of the material is an advantage in the subsequent operations of preparing and spinning, by reducing greatly the amount of dust that this harsh substance would otherwise give off. Nevertheless, I have seen jute in the course of spinning give off much coarse dust, and should anticipate that could the statistics of the jute manufacture be got at they would, on the whole, exhibit still more insanitary results than do those of the linen trade.

It is only for Scotland that the vital statistics of workers in jute have been separately recorded, but it is somewhat doubtful whether employment in the industry is sufficiently permanent to warrant final conclusions. During the three years ending with 1892 there occurred in Scotland 132 deaths of jute workers ages 25 to 64, and of this number only 26, or 19.7 per cent, were from consumption. There also occurred 20 deaths from bronchitis, 15 from pneumonia, and 4 from other respiratory diseases, a total of 65 deaths from diseases of the lungs and air passages, or 49.2 per cent of the mortality from all causes. In commenting upon the mortality of persons employed in the manufacture of jute, the Supplement to the Thirty-eighth Annual Report of the Registrar-General of Scotland states that diseases of the respiratory system and phthisis are especially prominent as causes of death, and that to these diseases may be added diseases of the nervous and circulatory systems. If, however, the general death rates of jute workers are compared with the corresponding mortality of males generally, the rates are rather below than above the average except at ages 15 to 19. This rather unexpected result is no doubt due in part to occupation selection, but as has been previously pointed out, the class of labor employed in jute manufacture in Scotland is of a decidedly low order. The details of the mortality for three years ending with 1892 are set forth in the following table, which has been abstracted from the report (p. lxxi) previously referred to:

**MORTALITY OF MALE EMPLOYEES IN JUTE MANUFACTURE IN SCOTLAND,
1890 TO 1892.**

[From the Supplement to the Thirty-eighth Annual Report of the Registrar-General of Births, Deaths, and Marriages of Scotland.]

Age.	Years of life. (a)	Deaths.	Rate per 1,000.	Rate per 1,000 for all employed males.
15 to 19 years.....	7,077	37	5.23	5.72
20 to 24 years.....	3,180	26	7.86	7.53
25 to 44 years.....	5,259	38	7.23	9.98
45 to 64 years.....	2,568	94	36.60	24.34
65 years or over.....	441	37	83.90	99.58

* The years of life as used in this table means three times the number of employees in jute manufacture enumerated at the census of 1891.

The Supplement to the Forty-eighth Annual Report of the Registrar-General of Scotland, published in 1905, comments at greater length upon this employment, and again the statistical data contradict some of the previously quoted medical conclusions unfavorable to the industry. According to the report, males in jute manufacture experienced death rates at ages 25 to 44 and 45 to 64 below the corresponding death rates of all males in Scotland. At ages 25 to 64 there occurred 145 deaths from all causes among jute workers, and of this number 26, or 17.9 per cent, were from consumption and other tubercular diseases, while 19 were from pneumonia, 12 from bronchitis, and 3 from other respiratory diseases, a total of 60 deaths from diseases of the lungs and air passages, or 41.4 per cent of the mortality from all causes. The facts in detail regarding the general mortality of jute workers, by divisional periods of life, for the three years ending with 1902, are set forth in the table below, which has also been abstracted from the report (p. cxxvii) previously referred to:

**MORTALITY OF MALE EMPLOYEES IN JUTE MANUFACTURE IN SCOTLAND,
1900 TO 1902.**

[From the Supplement to the Forty-eighth Annual Report of the Registrar-General of Births, Deaths, and Marriages of Scotland.]

Age.	Years of life. (a)	Deaths.	Rate per 1,000.	Rate per 1,000 for all employed males.
15 to 24 years.....	12,213	57	4.67	.....
25 to 44 years.....	9,294	59	6.35	9.32
45 to 64 years.....	4,740	86	18.14	26.82
65 years or over.....	888	61	68.69	.....

* The years of life as used in this table means three times the number of employees in jute manufacture enumerated at the census of 1901.

The available statistical data do not warrant a definite conclusion at the present time, but the observed conditions in the industry suggest that the same may safely be classed among the dusty trades more or less injurious to health and predisposing to consumption.

PAPER AND PULP MANUFACTURE.

The manufacture of paper and wood pulp, according to the census of 1905, gave employment to 65,964 wage-earners, the number of which had increased 33 per cent during the preceding five years. The industry is concentrated in large plants, in which, broadly speaking, the conditions of work, with particular reference to disease and exposure to other health-injurious circumstances, are more satisfactory than in small establishments. The industry has undergone a marked change within recent years, and the predominating material used in manufacture now consists of wood pulp, in place of linen rags, which in the past constituted the sole material from which paper was made. Among other materials which are at the present time employed in paper manufacture, aside from wood pulp, are chiefly rags, including cotton and flax waste and sweepings, manila stock, including jute, bagging, rope, waste, threads, and straw, which last is being employed to an increasing extent, including the rice straw of the Southern States.

The most important dust-producing material is rags, which, as a rule, however, are subjected to a preliminary sorting process outside of paper mills. A careful sorting process is necessary to eliminate colored rags, which are not adapted for white paper making, all of which is carried on in the rag and sorting rooms, which form the dustiest section of a paper mill. The sorting and the transfer of the rags to the cylinders in which they are boiled under high pressure with caustic soda are, according to Arlidge, the only important processes in which dust is set free except at the tear-up machines and to a limited extent in the bleaching department, where there is often a diffusion of the dust of bleaching powder, which, however, can be prevented by previously moistening it, which is often the case.

The health-injurious aspects of the industry are referred to in a report of the Massachusetts state board of health to the effect that—

The operatives engaged in certain of the processes of paper making are exposed to considerable dust from rags used in the manufacture; those engaged in other departments are exposed more or less to wet; and those in still others are exposed to no industrial dangers whatever. The most important department of such a mill, from a sanitary standpoint, is the rag-sorting room. In most of the mills visited provision exists for carrying away, by mechanical ventilation, the dust arising from the handling of the rags; in some, no provision whatever is made. On account of the nature of the raw material, it is generally thought that there is some risk of infection of those who handle the rags, and smallpox is everywhere looked upon as one of the most important possible dangers of the paper industry. It would appear, however, from facts obtainable, that cases of infection traceable to the handling of rags are not common. In some of the establishments, it is said, the rag sorters are seldom sick. In the establishments visited the operatives had generally the appearance of health and strength.

In a subsequent report by the same authority the dust problem in paper manufacture is discussed at greater length, in part as follows:

The materials from which paper is made include rags, burlap, old paper and wood pulp. Rags are derived chiefly from foreign countries, from which they are imported in bales compressed by hydraulic power. These are opened at the mill, and the contents are put into a closed, box-like structure, known as a "beater" or "thresher," containing a large wooden roller with iron "fingers," which revolve several hundred times per minute. This separates the rags and shakes them thoroughly, giving rise to much dust, which falls between the long strips of iron grating beneath the roller into a specially constructed receptacle, which may be cleaned out by hand or by means of an exhaust fan and dust pipe. During this process more or less dust commonly escapes into the room, and in some instances the amount is very great, partly because of the very dirty character of the rags handled. From facts gathered with reference to this process in 80 establishments it appears that, with the usual grade of stock, no matter what kind of "duster" or "thresher" is used, and in spite of exhaust fans and dust pipes, some dust will escape. With high-grade stock certain dusters work very well, while with low-grade stock the results are far from satisfactory. Some very high-grade clean stock gives off little if any dust.

In some mills the dust from the threshers is collected and baled. This work is exceedingly dusty, and the men who perform it are provided with respirators, which they appear to use with far less reluctance than is shown by those to whom they are supplied in other dusty trades.

From the duster or thresher the rags are conveyed by hand or through a chute to the sorting room, where they are sorted on tables with box-like tops provided with bottoms of wire netting, through which dust and fine particles escape to receptacles below.

The most recent English mortality statistics of paper manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General in part as follows:

At ages under 20 years paper makers experience a mortality considerably above, and at ages over 65 years slightly above, the standard for occupied and retired males; at all other ages it is below the standard, the difference being most marked at ages 35 to 55 years. In the main working period of life the comparative mortality figure is 730, or 27 per cent below the standard. The mortality from influenza, alcoholism, and liver disease, and accident is in each case less than half the standard, and under every other heading except suicide there is also an advantage. (^a)

The recent English mortality statistics for persons employed in the paper industry do not indicate a very marked effect of this employment on health, but rather to the contrary the general death rate was below the average at ages 20 to 64. In the table which follows

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. xcl.

a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the comparison shows that it is only at ages 15 to 19, and 65 or over, that the general death rate of persons employed in paper manufacture exceeds the general average.

MORTALITY FROM ALL CAUSES AMONG PAPER MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for paper makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	3.46	+1.02	142
20 to 24 years.....	4.41	4.01	— .40	91
25 to 34 years.....	6.01	5.02	— .99	84
35 to 44 years.....	10.22	6.66	— 3.56	65
45 to 54 years.....	17.73	11.05	— 6.68	62
55 to 64 years.....	31.01	26.38	— 4.63	85
65 years or over.....	88.39	94.80	+6.41	107

The preceding table is self-explanatory and requires no further comment. A more extended comparison, however, is made in the next table, in which the mortality of paper makers from consumption is compared with the normal mortality of occupied males from this disease, by divisional periods of life. The comparison shows that the mortality from consumption was below the average at all ages.

MORTALITY FROM CONSUMPTION AMONG PAPER MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for paper makers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.54	.....	100
20 to 24 years.....	1.55	1.29	— .26	83
25 to 34 years.....	2.03	1.95	— .08	96
35 to 44 years.....	2.74	2.13	— .61	78
45 to 54 years.....	3.04	1.78	— 1.26	59
55 to 64 years.....	2.16	1.86	— .30	86
65 years or over.....	1.11	1.02	— .09	92

The foregoing comparison indicates a degree of consumption frequency below the average for paper makers, but the differences are not very pronounced and at certain periods of life are very slight. It is quite probable that occupation changes affect the accuracy of the official vital statistics and that the health-injurious effects of the industry are more serious than is disclosed by an analysis of the available statistical information regarding this employment.

The recorded industrial insurance mortality statistics of paper makers are limited to 115 deaths from all causes, of which 34, or 29.6 per cent, were from consumption. Of the mortality of paper makers from respiratory diseases other than consumption, 9 were from pneumonia and 1 was from bronchitis. There were 44 deaths of paper makers from consumption and from other respiratory diseases combined, or 38.3 per cent of the total mortality was due to diseases of the lungs and air passages. The excess in the mortality of paper makers from consumption is clearly brought out in the tabular presentation of the proportionate mortality from this disease, by divisional periods of life.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG PAPER MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for paper makers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of paper makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Paper makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	13	6	46.2	27.8
25 to 34 years.....	28	15	53.6	31.3
35 to 44 years.....	18	7	38.9	23.6
45 to 54 years.....	15	2	13.3	15.0
55 to 64 years.....	23	3	13.0	8.1
65 years or over.....	18	1	5.6	2.7
Total.....	115	34	29.6	14.8

While according to this table the consumption mortality of paper makers was excessive at all ages except 45 to 54, the excess was most pronounced at ages 15 to 44. At ages 15 to 24, out of every 100 deaths from all causes, 46.2 were from consumption, against 27.8 expected; at ages 25 to 34 the proportion was 53.6, against 31.3 expected; and at ages 35 to 44 the proportion was 38.9, against 23.6 expected.

CABINETMAKERS.

The occupation of the cabinetmaker is a well-defined and separate branch of carpentry practically limited to the manufacture of furniture, and men in this employment are often separately classified as furniture makers and repairers. Occasionally the classification in-

cludes upholsterers, but since the exposure to health-injurious conditions is essentially different in the two occupations, such a grouping is not in conformity to the conditions under which the two employments are carried on. The census of 1900 returns the number of cabinetmakers at 35,641, but in addition the number of persons employed in furniture manufacture was 23,078. In the vital statistics of the census of 1900, however, cabinetmakers and upholsterers are combined into one group, but the mortality returns were limited to the registration States, giving the combined number of the two employments for known ages 15 years or over as 24,695. Among this number there occurred during the census year 446 deaths from all causes, or at the rate of 18.06 per 1,000 per annum, against a general average for all occupations of only 15.16. The mortality from consumption among cabinetmakers and upholsterers, according to the census, was excessively high, or 3.59 per 1,000, against 2.37 for all occupations, and 2.62 for the manufacturing and mechanical industries class. The consumption mortality of cabinetmakers and upholsterers was also decidedly in excess of the corresponding mortality of carpenters and joiners. While the consumption mortality rate for cabinetmakers and upholsterers was 3.59 per 1,000, as previously stated, the corresponding rate for carpenters and joiners was 2.31. It is also of interest to note that while among cabinetmakers and upholsterers the proportion of persons of ages 65 or over was 6 per cent, the corresponding proportion for carpenters and joiners was 7.9 per cent. If the two employments had been separately returned the value of the data would have been very materially increased. It is quite safe to assume, however, that of the two occupations, that of the upholsterer is more injurious to health than the employment of the cabinetmaker.

Qualified medical opinion is divided as to the health-injurious effects of the continuous inhalation of wood dust, but it is generally agreed that the dust of hard wood is more injurious than the dust of soft wood, and that the most injurious of all is the dust of so-called satinwood, or African boxwood, which, however, is used in only very limited quantities for special purposes, which will be referred to again under wood turners and other woodworkers subsequently to be mentioned.

Ramazzini held the opinion that workers in wood do not suffer any serious inconvenience on account of their employment, except those working in cypress, which produces headache, an opinion which does not seem to be confirmed by extensive experience in our numerous cypress shingle mills. At least no qualified medical opinion has been made a matter of record, to the effect that employees in cypress mills are subject to particularly injurious conditions. Thackrah, writing in 1832, refers to health-injurious consequences among men

working in particular kinds of hard wood, and his opinion is here quoted, since it was fully confirmed by subsequent experience. "Cabinetmakers suffer from the dust when they saw African, cam, rosewood, and Spanish mahogany. The first of these is most injurious. Its dust produces sneezing, headache, sickness, and sometimes vomiting. This wood, however, is rarely used."

B. W. Richardson, M. D., also commented upon wood dust as more or less injurious to health and as a substance injurious to the lungs, stating that—

The dusts of some kinds of wood, to which turners of wood and fine cutters of wood are exposed, are causes of much irritation of the lungs and of bronchial cough. The dust is fine and penetrating, and when it is from colored wood it imparts its own peculiar color to the bronchial secretion. I have seen these phenomena, markedly in the case of mahogany carvers, in those who carve ornaments for couches and other articles of furniture. The work gives rise to a great quantity of wood dust, which is constantly inhaled. In carving, the artisan has to keep up a blowing process with the lips in order to blow away the small portions of wood which he removes with the chisel. This process is very wearying, but the chief complaint made by the worker is of the dust he draws back in inhalation. The mischief is greatly increased in the rooms where the ventilation is imperfect. The cough is usually attended with copious secretion from the bronchial tubes, and I have more than once known the loss from this cause so copious as to cause other symptoms of wasting and exhaustion allied to phthisis pulmonalis and constituting what has been called bronchial phthisis. As a rule, however, those who suffer from this form of disease recover when they are removed from their occupation and are placed in favorable circumstances for recovery.

More recent observations are by Parry, who refers to the employment of cabinetmakers, but who, in particular, considers the process of sandpapering and the resulting mixture of mineral with organic dust. In his opinion, "carpenters, joiners, turners, and cabinetmakers are exposed to the risks of breathing in wood dust; but the lung-disease death rate—337 compared with 402 for all males—does not seem to prove that much harm is caused by its inhalation."

Tracy refers very briefly to the occupation, and after stating that dust of vegetable origin is on the whole quite harmless, holds, regarding the effect of wood dust in particular, as follows: "The workmen who inhale vegetable dust do not as a rule suffer in consequence. The dust of wood, in particular, is so harmless that it seems more appropriate to speak of cabinetmakers and carpenters under another heading, as their attitude while at work has more to do in bringing on disease than the atmosphere they breathe. The dust of the hard woods, as mahogany, rosewood, etc., may cause slight irritation of the larynx and trachea and a tendency to bronchial catarrh."

The annual reports of English factory inspectors contain frequent references to the health-injurious effects of African boxwood, or so-called satinwood, rosewood, etc., but since the manufacture of small articles in which this wood is used brings the employment more properly within the group of wood turners and carvers, the peculiar effects of the dust of this wood on health will there be considered in more detail.

As previously stated, the United States census returns combine the mortality of cabinetmakers with that of upholsterers; and the only official vital statistics are for the State of Rhode Island for the decade ending with 1906. The number of deaths of cabinetmakers recorded was only 50 from all causes, and of this number 12, or 24 per cent, were from consumption. The number of deaths from respiratory diseases other than consumption among men in this occupation was 9, which, combined with the mortality from consumption, returned 21 deaths from diseases of the lungs and air passages, or 42 per cent of the mortality from all causes. The corresponding percentage of deaths from consumption and from other respiratory diseases for all males in Rhode Island was 30.3 per cent.

The most recent English mortality statistics of cabinetmakers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part as follows:

Cabinetmakers suffer more severely than all occupied and retired males at ages under 20 and above 65, but at all intermediate ages the death rates are below the standard, while at every stage of life they exceed those of carpenters. In the main working period the comparative mortality figure of cabinetmakers is 956, or 5 per cent, below the standard. They suffer less than the average from influenza, alcoholism, and liver disease, as well as from diseases of the nervous, circulatory, and respiratory systems; the mortality from accident is also low. On the other hand, among these workers both cancer and phthisis are more fatal than the average, and suicide is more common. (^a)

The recent English mortality statistics for cabinetmakers are not quite conclusive as to the generally unfavorable effects of this industry on health. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and while the returns are not entirely conclusive they are suggestive of more or less unfavorable circumstances connected with the employment, since at ages 35 to 64 the departure from the normal is very slight and probably to a not inconsiderable extent the result of occupation changes more or less likely to impair the value of the available statistical data.

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxx.

MORTALITY FROM ALL CAUSES AMONG CABINETMAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for cabinetmakers.		
		Rate per 1,000.	Greater (+) or less (—) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.61	+0.17	107
20 to 24 years.....	4.41	3.73	— .68	85
25 to 34 years.....	6.01	5.20	— .81	87
35 to 44 years.....	10.22	9.84	— .38	96
45 to 54 years.....	17.73	17.34	— .39	98
55 to 64 years.....	31.01	30.65	— .36	99
65 years or over.....	88.39	82.99	—5.41	94

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of cabinetmakers from consumption is compared with the normal mortality of occupied males from this disease, by divisional periods of life. The comparison shows that the mortality from consumption was excessive at all ages, but in marked contrast to a low general death rate at ages 20 to 64. The corresponding death rates from consumption were excessive for cabinetmakers at all ages 15 or over. While the excess was not very marked, the departure from the normal is quite significant at ages 35 to 44.

MORTALITY FROM CONSUMPTION AMONG CABINETMAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for cabinetmakers.		
		Rate per 1,000.	Greater (+) or less (—) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.69	+0.15	128
20 to 24 years.....	1.55	1.65	+ .10	106
25 to 34 years.....	2.03	2.18	+ .15	107
35 to 44 years.....	2.74	3.79	+1.05	138
45 to 54 years.....	3.04	3.83	+ .79	126
55 to 64 years.....	2.16	2.71	+ .55	125
65 years or over.....	1.11	1.86	+ .75	168

The recorded industrial insurance mortality statistics of cabinetmakers include 817 deaths from all causes. Of this number 162, or 19.8 per cent, were from consumption. In the mortality from respiratory diseases other than consumption there were 75 deaths from pneumonia, 14 from asthma, 14 from bronchitis, and 17 from other less frequent respiratory diseases. Of the total mortality 34.5 per cent was from diseases of the lungs and air passages. The mortality from consumption was excessive at all ages, but most so at 25 to 34, when out of every 100 deaths from all causes 55.7 were from consumption against a normal expected proportion of 31.3. The analysis of the mortality from consumption in detail is presented in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG CABINETMAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for cabinetmakers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of cabinetmakers 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Cabinetmakers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	39	14	35.9	27.8
25 to 34 years.....	61	34	55.7	31.3
35 to 44 years.....	82	40	48.8	23.6
45 to 54 years.....	136	31	22.8	15.0
55 to 64 years.....	197	29	14.7	8.1
65 years or over.....	302	14	4.6	2.7
Total.....	817	162	19.8	14.0

The observations and statistical data regarding the mortality of cabinetmakers confirm the conclusion that the degree of consumption frequency in this employment is decidedly excessive, and without question directly connected with the health-injurious circumstances of the trade. The excess in the degree of consumption frequency is most marked at ages 35 or over, which would make it probable that the type of the disease as met with in this employment assumes, in many cases, the fibroid form, or that of a distinct occupation disease.

WOOD TURNERS AND CARVERS.

Wood turning and carving are industries in which the conditions affecting health and life are much the same as in cabinetmaking and other woodworking industries. The amount of wood dust inhaled is probably larger, but no very conclusive information is available, with the exception of the health-injurious effects of working on so-called African boxwood, or satinwood, much of which is used for shuttle making. The effects of the dust, however, are probably not as serious to the lungs as to the system generally, and the most im-

portant effect of the dust of African boxwood is paralysis of the nerves. The whole subject was carefully considered before the commission on industrial diseases, and rules have been issued prohibiting the use of this wood, except under certain specified restrictions. The symptoms, as defined by Oliver, are similar to those occurring among cabinetmakers and joiners, who saw, chip, and otherwise manipulate the sequoia wood of our Pacific coast. It is stated that they resemble those exhibited by persons who are suffering from a bad cold in the head and chest, including irritation in the throat and bronchial tubes, accompanied by cough, labored breathing, and quickened pulse. The symptoms usually last only for a day or two and are usually seen only among men who are working with the wood for the first time. A tolerance seems to be established in regard to it, except in the case of men who are liable otherwise to bronchitis and asthma.

Oliver enlarges upon the subject and, after pointing out that certain kinds of wood have a bad reputation among joiners and that some sawdusts are more irritating than others, probably from the large amount of inorganic matter which they contain, he refers to conditions in Lancashire, where "the dust given off during the manufacture of shuttles for weaving purposes is a cause of malaise to the workmen employed. Many of them suffer from headache, coryza, excessive secretion of tears, and attacks of asthma." "The men who suffered presented a pale and jaundiced appearance; their breath had a peculiar camphor-like odor. Several of them had attacks of difficulty of breathing and of precordial pain accompanied by cold sweating. There was also marked slowing of the heart's action."

The health-injurious effects of wood working in hard woods, such as ebony and rosewood, have been recognized by different authorities on occupation diseases, and according to Arlidge of all woods rosewood produces the most obnoxious dust, emphasizing the fact that physical conformation and density of dust particles are not the sole factors governing the health-injurious effects on the human system.

The most recent English mortality statistics of wood turners and coopers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General in part as follows:

At every group of ages except 15 to 20 years, the death rate exceeds the standard for all occupied and retired males, the excess being greatest in middle life. In the main working period the comparative mortality figure is 1,181, or 18 per cent above the standard. From all the principal causes, except accident, the mortality exceeds the average. Wood turners and coopers are specially liable to phthisis, as well as to diseases of the respiratory system and to Bright's disease.

The recent English statistics of wood turners are quite conclusive of the unfavorable effects of this industry on health. In the table

which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is decidedly suggestive of conditions in the trade more or less unfavorable to life and health. The excess in the general death rate of wood turners is met with at all ages, but is most pronounced at ages 45 or over.

MORTALITY FROM ALL CAUSES AMONG WOOD TURNERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate of wood turners.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	1.94	-0.50	80
20 to 24 years.....	4.41	4.46	+ .05	101
25 to 34 years.....	6.01	6.23	+ .22	104
35 to 44 years.....	10.22	11.69	+1.47	114
45 to 54 years.....	17.73	24.98	+7.25	141
55 to 64 years.....	31.01	34.70	+3.69	112
65 years or over.....	88.39	92.82	+4.43	105

The preceding table is self-explanatory and requires no further comment. A more extended comparison, however, is made in the next table, in which the mortality of wood turners from consumption is compared with the normal mortality of occupied males from this disease, by divisional periods of life. The comparison shows that the mortality from consumption was excessive at all ages, but decidedly so at ages 35 to 54, when the excess was 1.05 per 1,000 at ages 35 to 44 and 2.48 per 1,000 at 45 to 54.

MORTALITY FROM CONSUMPTION AMONG WOOD TURNERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for wood turners.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.63	+0.09	117
20 to 24 years.....	1.55	1.54	- .01	99
25 to 34 years.....	2.03	2.89	+ .86	142
35 to 44 years.....	2.74	3.79	+1.05	136
45 to 54 years.....	3.04	5.52	+2.48	183
55 to 64 years.....	2.16	2.96	+ .80	137
65 years or over.....	1.11	1.36	+ .25	123

The recorded industrial insurance mortality experience of wood turners includes 127 deaths from all causes, of which 25, or 19.7 per cent, were from consumption. Of the mortality of wood turners from other respiratory diseases, 3 were from asthma, 2 from bronchitis, 11 from pneumonia, and 5 from less frequent diseases of this class. If the deaths from consumption and from other respiratory diseases are combined, 36.2 per cent of the mortality of wood turners was from diseases of the lungs and air passages. The number of deaths of wood turners included in this analysis is not quite sufficient for a final conclusion, but is decidedly suggestive of health-injurious circumstances destructive of life and health at an early period of life. The excess in the consumption mortality is more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. The comparison shows that the consumption mortality was decidedly excessive at all ages under 65, but most so at 15 to 34, when the proportionate mortality was 70 per cent at ages 15 to 24, and 62.5 per cent at 25 to 34.

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG WOOD TURNERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for cabinetmakers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of wood turners, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Wood turners.	Males in registration area, 1900 to 1906.
15 to 24 years.....	10	7	70.0	27.8
25 to 34 years.....	8	5	62.5	31.3
35 to 44 years.....	17	3	17.6	23.6
45 to 54 years.....	24	4	16.7	15.0
55 to 64 years.....	33	5	15.2	8.1
65 years or over.....	35	1	2.9	2.7
Total.....	127	25	19.7	14.8

The recorded industrial insurance mortality experience of wood carvers may be separately considered, and the statistics available include 123 deaths from all causes. Of this number, 27, or 22.0 per cent, were from consumption, and 16, or 13.0 per cent, from respiratory diseases other than consumption. Of the mortality from other respiratory diseases, 9 deaths were from pneumonia, 2 from asthma, 2 from bronchitis, and 3 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 35 per cent of the total mortality of wood carvers is shown to have been from diseases of the lungs and air passages.

The following table gives the details of the comparative mortality of wood carvers from consumption in the recorded industrial mortality experience:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG WOOD CARVERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for wood carvers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of wood carvers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Wood carvers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	11	3	27.3	27.8
25 to 34 years.....	20	9	45.0	31.3
35 to 44 years.....	23	9	39.1	23.6
45 to 54 years.....	31	5	16.1	15.0
55 to 64 years.....	21	1	4.8	8.1
65 years or over.....	17	.....	.....	2.7
Total.....	123	27	22.0	14.8

The statistics for wood carvers do not show as great an excess in the mortality from consumption over the normal expected as was true of wood turners, but the excess is considerable, especially at ages 25 to 34 and 35 to 44. At ages 25 to 34, out of every 100 deaths from all causes 45 were from consumption, against 31.3 expected; at ages 35 to 44 the proportion was 39.1 for wood carvers, against 23.6 expected.

The observations and statistical data regarding the mortality of wood turners and wood carvers confirm the conclusions that the degree of consumption frequency in this employment is decidedly excessive and without question directly connected with the health-injurious circumstances of the trade. The excess in the degree of consumption frequency is most marked at advanced ages, which would make it probable that the type of the disease assumes in many cases the fibroid form or that of a distinct occupation disease.

SUMMARY OF CONCLUSIONS REGARDING OCCUPATIONS WITH EXPOSURE TO VEGETABLE FIBER DUST.

The occupations involving exposure to vegetable fiber dust have been considered in more or less detail. In this group, as in those exposing to metallic and mineral dusts, it has not been possible in all cases to base conclusions upon identical data, but the returns from the various available sources are sufficiently complete to be of considerable value. The census returns of 1900 give the age distribution of cotton-mill operatives, hosiery and knitting-mill operatives, paper and pulp mill

workers, and cabinetmakers, the aggregate number of such persons being 184,245. This number is exclusive of males under 15 and of males of unknown ages. The statistics show that only 4,342, or 2.4 per cent, had attained to an age of 65 or over, against a normal expected proportion of 4.7. This fact is quite suggestive of conditions unfavorable to health and life in occupations exposing to vegetable fiber dust. The details of the age distribution are given in the following table, by divisional periods of life, together with the corresponding percentage distribution of all occupied males, the data for both groups being derived from the census of 1900.

NUMBER AND PER CENT OF MALES IN EACH AGE GROUP IN OCCUPATIONS EXPOSED TO VEGETABLE FIBER DUST, COMPARED WITH NUMBER AND PER CENT IN ALL OCCUPATIONS IN THE UNITED STATES, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Males in occupations exposed to vegetable fiber dust.		All occupied males.	
	Number.	Per cent.	Number.	Per cent.
15 to 24 years.....	73,209	39.7	5,933,720	26.0
25 to 34 years.....	47,213	25.6	5,993,847	26.3
35 to 44 years.....	31,584	17.1	4,704,682	20.6
45 to 54 years.....	19,115	10.4	3,260,259	14.3
55 to 64 years.....	8,782	4.8	1,856,181	8.1
65 years or over.....	4,342	2.4	1,063,856	4.7
Total.....	184,245	100.0	22,802,545	100.0

According to this analysis, the proportion of persons aged 15 to 34 was 65.3, or nearly two-thirds of the total, against 52.3 expected. At ages 45 or over, the proportion was 17.6 for the group under consideration, against 27.1 for occupied males generally. This favorable age distribution is due to the fact that in the textile industries a considerable proportion of the employees are comparatively young persons, the work being such that no great amount of muscular effort is required.

It is, unfortunately, not possible to present a combined summary of the United States census vital statistics of persons employed in occupations included in this group, since the vital statistics of the census deal only with cabinetmakers and upholsterers. A comparison of the rates for cabinetmakers and upholsterers with the mortality rates of occupied males generally indicates an excessive mortality among cabinetmakers at ages 25 to 44 and at ages 65 or over. The death rate from consumption for cabinetmakers and upholsterers was 3.59, against 2.37 expected, and the death rate from other respiratory diseases was 2.54, against 1.97 expected. The details of the mortality by ages are given in the following table, together with the corresponding death rates for all occupied males, the data for both groups being derived from the census of 1900:

MORTALITY FROM ALL CAUSES AMONG CABINETMAKERS AND UPHOLSTERERS IN THE REGISTRATION STATES, COMPARED WITH THAT OF ALL OCCUPIED MALES IN THOSE STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Age.	Cabinetmakers and upholsterers.			All occupied males.		
	Number employed.	Number of deaths from all causes.	Rate per 1,000 from all causes.	Number employed.	Number of deaths from all causes.	Rate per 1,000 from all causes.
15 to 24 years.....	4,135	19	4.59	1,259,471	6,486	5.15
25 to 44 years.....	12,239	128	10.46	2,680,241	23,541	8.78
45 to 64 years.....	6,825	185	19.78	1,282,259	25,532	19.91
65 years or over.....	1,496	164	109.63	283,810	27,888	98.44
Total.....	24,695	446	a 18.06	5,505,281	83,447	b 15.16

* From consumption there were 89 deaths, or a rate of 3.59. From other diseases of the respiratory system there were 63 deaths, or a rate of 2.54.

* The rate of mortality from consumption was 2.37; from other diseases of the respiratory system, 1.97.

The occupation mortality statistics of Rhode Island are available for five specific occupations included in this group, and when combined returned 927 deaths from all causes, of which 253 were from consumption and 87 from respiratory diseases other than consumption. The corresponding percentages were 27.3 of deaths from consumption for persons employed in groups with exposure to vegetable fiber dust, against 17.8 for occupied males generally in the State of Rhode Island. The percentage of deaths from other respiratory diseases was 9.4 for the occupations in this group, against 12.5 expected.

The English vital statistics for this group of occupations include textile operatives generally—hosiery workers, lace workers, cordage workers, paper-mill employees, cabinetmakers, and wood turners. When the statistics for these occupations are combined, they exhibit rather high death rates at all ages over 45. The details in tabular form are set forth in the following table:

MORTALITY FROM ALL CAUSES, FROM CONSUMPTION AND FROM OTHER RESPIRATORY DISEASES IN OCCUPATIONS EXPOSED TO VEGETABLE FIBER DUST, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 due to all causes among—		Death rate per 1,000 due to consumption among—		Death rate per 1,000 due to other diseases of the respiratory system.	
	All occupied males.	Occupations exposed to vegetable fiber dust.	All occupied males.	Occupations exposed to vegetable fiber dust.	All occupied males.	Occupations exposed to vegetable fiber dust.
15 to 19 years.....	2.44	2.59	0.54	0.75	0.24	0.26
20 to 24 years.....	4.41	4.15	1.55	1.63	.48	.54
25 to 34 years.....	6.01	5.49	2.08	2.18	.77	.73
35 to 44 years.....	10.22	9.57	2.74	3.16	1.66	1.46
45 to 54 years.....	17.73	19.06	3.04	3.80	3.32	3.61
55 to 64 years.....	31.01	35.47	2.16	2.79	6.54	8.23
65 years or over...	88.39	104.00	1.11	1.63	17.77	23.35

The table shows that the mortality from consumption among males with exposure to vegetable fiber dust was excessive at all ages, but particularly so at ages 25 or over. The mortality from respiratory diseases, other than consumption, was about normal at ages 15 to 44, somewhat excessive at ages 45 to 54, and considerably above the normal expected at ages 55 or over.

The industrial insurance mortality statistics are available for eight occupations included in this group, returning in the aggregate 2,460 deaths of males from all causes at ages 15 years or over. Of this number 610, or 24.8 per cent, were from consumption. The deaths from respiratory diseases other than consumption numbered 326, or 13.3 per cent. The expected consumption mortality, on the basis of the mortality of males in the registration area of the United States for the seven-year period 1900 to 1906, was 14.8 per cent, and from other respiratory diseases 11.7 per cent. When the mortality from consumption and from other respiratory diseases is combined, the proportionate percentage of deaths of males in occupations with exposure to vegetable fiber dust was 38.0, against 26.5 per cent expected.

The following table gives the summary statistics in detail for the eight occupations in this group for which the industrial insurance mortality experience has been sufficiently large to warrant their inclusion:

PROPORTIONATE MORTALITY FROM CONSUMPTION IN OCCUPATIONS EXPOSED TO VEGETABLE FIBER DUST, 1897 to 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 to 1906, BY AGE GROUPS.

[Figures for occupations exposed to vegetable fiber dust from experience of an industrial insurance company; figures for males in registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths in occupations exposed to vegetable fiber dust, 1897 to 1906, due to—		Per cent of deaths due to consumption in—	
	All causes.	Consumption.	Occupations exposed to vegetable fiber dust.	Males in registration area, 1900 to 1906.
15 to 24 years.....	244	97	39.8	27.8
25 to 34 years.....	369	190	51.9	31.3
35 to 44 years.....	355	143	40.3	23.6
45 to 54 years.....	404	94	23.3	15.0
55 to 64 years.....	475	54	11.4	8.1
65 years or over.....	613	23	3.8	2.7
Total.....	2,460	610	24.8	14.8

* There were also 326 deaths from other diseases of the respiratory system, or 13.3 per cent of the deaths from all causes.

† The per cent of deaths from other diseases of the respiratory system in the registration area was 11.7.

It is evident from the foregoing observations and statistical data relating to a representative number of employments with exposure to vegetable fiber dust that the effects of such exposure are decidedly health injurious. The summary table shows that the mortality from consumption among employees in this group of occupations is very much higher at all ages than would normally be expected.

OCCUPATIONS WITH EXPOSURE TO ANIMAL AND MIXED FIBER DUST.

In the group of occupations exposing to a continuous and considerable inhalation of animal and mixed fiber dusts resulting from necessary industrial processes have been included for the present purpose the following representative employments: Furriers, hatters, silk manufacture, woolen and worsted manufacture, carpet and rug manufacture, shoddy manufacture, rag industry, upholsterers and hair-mattress makers. These occupations are all more or less subject to an excessive death rate from all causes, but in particular to a decided excess in the proportionate mortality from consumption, and in most cases also to a comparatively high degree of frequency in the occurrence of respiratory diseases. The details of labor conditions, as far as they could be conveniently included in the following summary of observations regarding particular trades, appear to fully confirm the opinion that the degree of excess in consumption frequency is intimately related and in almost exact proportion to the degree of exposure to continuous and considerable inhalation of animal and mixed fiber dusts.

FURRIERS AND TAXIDERMISTS.

Fur dressing and dyeing are preliminary manipulations of the fur material for a large variety of subsequent industrial processes, of which the most important is the manufacture of felt hats. While the census of manufactures of 1905 returns the number of wage-earners employed in the dressing of fur at only 1,105,^(a) the total is much larger when persons are included who manipulate fur as a preliminary process in hat manufacture, where the most important operations are pulling, blowing, and forming. All of these are employments exposing considerably and continuously to the inhalation of fine fur dust. The material used in felt hat manufacture is almost exclusively the fur of Belgian hares, which is imported for this purpose in enormous quantities. The preliminary process of fur pulling as carried on in Belgium and England is described in considerable detail by Rose E. Squire, one of His Majesty's inspectors of factories, whose observations and conclusions are of exceptional interest and value. Most of the fur pulling in Belgium is done by women, who

^a Census of Manufactures, 1905, Part I, p. 232.

work under very trying conditions, and the haze of floating hair, the sickly, disgusting odor of uncleaned skins, and other unfavorable circumstances, attract to this employment only the lowest class of labor. According to Miss Squire, "Fur pullers and openers belong to the poorest class of women. The dirty and repulsive nature of the work, and the low scale of wages, attract none but those who, for one reason or another, can get no other employment." Fortunately, as this observer points out, "Machines are taking the place of hand pulling to a certain extent, but the chief part of the work is done in Belgium, where men do the pulling for a low wage. The manufacturer here finds it cheaper to pay the carriage of British rabbit skins to Belgium and back than to have them pulled in England. Fur pullers are, as a class, irregular workers, and, being paid by the piece, the employer has no hold upon them." While the circumstances of labor in fur pulling and kindred employments are apparently very objectionable and in all probability injurious to health, this conclusion has not been established by such investigations as have been made by Miss Squire and others, and in fact the former observes that "when the workers in any industry are drawn only from that class whose standard of life is the very lowest, when insufficient food and clothing and all the other sad accompaniments of deep poverty have made their mark upon them, it is almost impossible to point to any one physical condition as a result of their occupation. Hoarseness, cough, and a bronchitic condition are common among fur pullers; such are also observed in the old and middle-aged women of the same class who are not fur pullers. One would certainly expect to find evidence among them of suffering caused by inhaling the down present in the air of the workrooms; but, except for occasional complaints that "it stuffs up the chest," most of the workers consider fur pulling a healthy occupation. It may be that the fur being so fine and light is not inhaled; the danger is probably more to be found in swallowing it, and the symptoms of ill health arising from this are, from their nature, not easily discoverable, and must be related by the sufferer; but the poor fur pullers look with suspicion on any inquiry touching their health, fearing that they may be deprived of their work, which, although they say it is not worth the doing, is all they have." (a)

Aside, however, from the question whether the industry is really injurious to health or not, the sanitary conditions can be materially modified to improve the comfort, and with practical certainty the health of the employees, for, according to Miss Squire, "Much more than has yet been attempted might be done to improve, by specially applied ventilation, the condition of fur-pulling rooms in factories and workshops. The drawing away of the pulled hair from the

^a See article on "Rabbit down," by Miss Squire, in *Oliver's Dangerous Trades*, p. 724.

worker in a downward direction by means of a properly constructed flue under the troughs and an extracting fan would seem to be practicable, and the down could be collected outside in a receptacle for the purpose."

The dressing and dyeing of aquatic furs has been described at length in a bulletin of the United States Fish Commission, in which the various processes are illustrated, with special reference to American conditions. It is evident that in most of the processes the risk of dust inhalation is a very considerable one, chiefly, of course, of fine particles of hair, wood, fur (properly so called), and animal down, which is usually a waste product. There is, in addition, a not inconsiderable risk of exposure to the inhalation of other health-injurious kinds of dust, of which arsenic is the most important metallic substance, combining poisonous qualities. From this descriptive account the following is extracted, as emphasizing the more important circumstances which give rise to the production of health-injurious dust and which, no doubt, can be materially modified by improved methods of dust removal at the point of origin:

"If the overhairs are to be removed, that process is next in order, except in the dressing of muskrat skins, when it is usually postponed until after the dressing. In preparing for plucking, the hair side is dried and warmed by artificial heat, the membrane being kept moist in the meantime. Each skin is placed flesh side down on a flat, hardwood beam, similar to that used in breaking except that it is covered with thick, elastic leather. Chalk is first sprinkled over the hair, and then, using a knife similar to that employed in breaking, a workman rubs or works most of the overhairs out of the membrane. Those not removed in this manner are subsequently plucked out with a dull knife of soft metal. With this knife in his right hand and his thumb protected with a rubber cot about 4 inches in length, the picker grasps the hairs between the edge of the knife and his protected thumb and with a quick, jerking motion pulls them out, going over the entire pelt in this manner. The fur seal is quite difficult to unhair, and the process is more complicated."

The process of fur manufacture in felt-hat making is, for the present purpose, the most important one. The number of men employed as fur blowers and cutters in the felt-hat industry is not known with accuracy, but it forms an important branch of the industry. The processes, in their relation to health-injurious circumstances, have been described in some detail in a special report of the Massachusetts state board of health on dangerous occupations, from which the following extract is made:

In the manufacture of derby and felt hats the essential material is fur, and that used for the best product is from cony and allied species. This comes to the factory clipped from the skin and treated

with cyanide of mercury. The different kinds of fur are mixed together in large covered machines, in which the coarse hair is separated from the soft, downy fur, which latter is taken to the felt machine. This consists of a revolving copper cone, perforated with numerous small holes, through which the air is drawn by suction apparatus. The cone is inclosed in a barrel-like covering, open at the top, which has a door in the side for the removal of the felt as made. The fine hairs are blown into the upper part of the inclosure, and they are attracted toward the perforated cone by the air currents going thereto. They are then deposited in a thin layer on the outside of the cone, and when the deposit has gone on to a sufficient extent a cloth wrung out in hot water is applied, and the cone and its covering are removed and plunged into hot water for a short time, the heat and moisture causing the individual hairs to become more intimately matted; then the conical layer is pulled off and sent to the shrinking room.

The most recent English mortality statistics of furriers are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General in part as follows:

The numbers comprised in this occupation are too limited to warrant more than general statements concerning them. Except at the age group 20 to 25 years, the death rates are considerably above the standard for all occupied and retired males, and at every age group their mortality very considerably exceeds that of tanners, being more than double as great at some stages of life. In the main working period their comparative mortality figure from all causes is 1,332, or 33 per cent above the standard, and no less than 72 per cent above the corresponding figure for tanners. The mortality from accident and from suicide is less than the standard for all occupied and retired males, and is also less than that for tanners, but from all other causes furriers suffer excessively, the mortality from cancer being three times as great, and that from influenza and phthisis, as well as from nervous and circulatory diseases, being about twice as great as that for tanners. (a)

The recent English statistics for furriers are quite conclusive of the more or less unfavorable effect of this industry on health. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is decidedly suggestive of conditions in this trade more or less unfavorable to life and health. The excess in the general death rate of furriers is met with at all ages. The excess in the death rate of furriers at ages 25 to 54 is between 2.29 and 2.69 per 1,000, increasing suddenly to astonishing proportions at ages 55 or over. While the excess at the age period 55 to 64, or 20.27 per 1,000, may be in part the result of comparatively small numbers, the comparison is, nevertheless, decidedly suggestive.

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxv.

MORTALITY FROM ALL CAUSES AMONG FURRIERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for furriers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	3.72	+ 1.28	152
20 to 24 years.....	4.41	4.42	+ .01	100
25 to 34 years.....	6.01	8.52	+ 2.51	142
35 to 44 years.....	10.22	12.91	+ 2.69	126
45 to 54 years.....	17.73	20.02	+ 2.29	113
55 to 64 years.....	31.01	51.28	+ 20.27	165
65 years or over.....	88.39	107.84	+ 19.45	122

The preceding table is self-explanatory and requires no further comment. A more extended comparison, however, is made in the next table, in which the mortality of furriers from consumption is compared with the normal mortality of occupied males from this disease by divisional periods of life. The comparison shows that the mortality from consumption was excessive at all ages 20 or over, the excess being most marked at ages 35 to 44 and at ages 55 or over.

MORTALITY FROM CONSUMPTION AMONG FURRIERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for furriers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	.....	.....	.....
20 to 24 years.....	1.55	1.77	+ .22	114
25 to 34 years.....	2.03	3.46	+ 1.43	170
35 to 44 years.....	2.74	4.74	+ 2.00	173
45 to 54 years.....	3.04	3.86	+ .82	127
55 to 64 years.....	2.16	7.33	+ 5.17	339
65 years or over.....	1.11	5.88	+ 4.77	530

The recorded industrial insurance mortality statistics of furriers and taxidermists include 105 deaths from all causes, of which 34, or 32.4 per cent, were from consumption. Of the mortality of furriers from respiratory diseases other than consumption, 9 were from pneumonia, 5 from bronchitis, and 3 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases

are combined, 48.6 per cent of the mortality of furriers was from diseases of the lungs and air passages. The excess in the consumption mortality of furriers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at 35 to 44, when out of every 100 deaths from all causes 63.3 were from consumption, against a normal expected proportion of 23.6. The numbers are too small for other periods of life to warrant entirely safe conclusions. The analysis of the consumption mortality of furriers in detail is set forth in the table below :

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG FURRIERS AND TAXIDERMISTS, 1897, TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for furriers and taxidermists from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of furriers and taxidermists, 1897 to 1906, due to—		Percent of deaths due to consumption among—	
	All causes.	Consumption.	Furriers and taxidermists.	Males in registration area, 1900 to 1906.
15 to 24 years.....	3	1	33.3	27.8
25 to 34 years.....	18	7	38.9	31.3
35 to 44 years.....	30	19	63.3	23.6
45 to 54 years.....	13	4	30.8	15.0
55 to 64 years.....	24	2	8.3	8.1
65 years or over.....	17	1	5.9	2.7
Total.....	106	34	32.4	14.8

The preceding observations and statistical data regarding the mortality of furriers confirm the conclusion that the degree of consumption frequency in this employment is decidedly excessive and without question directly connected with the health-injurious circumstances of the trade. The excess in the degree of consumption frequency in England and Wales is most marked at advanced years, which would make it probable that the type of the disease assumes in many cases the fibroid form, or that of a distinct occupation disease.

HATTERS.

All who have written on the diseases of occupation have included felt hat manufacture among the trades specifically injurious to health and life. The conditions which give rise to a high death rate and the degree of disease frequency above the normal are primarily due to the

continuous and considerable exposure to the inhalation of irritating dust, which is produced during nearly every important process of hat manufacture except the sizing, where steam and vapor, combined with high temperature, increase considerably the liability of the workmen to respiratory diseases. Mercurial poisoning is another serious risk of the industry, but limited to finishers and a few other departments, and, fortunately, less common at the present time than in former years. The felt hat making industry is concentrated in a few States, chiefly New Jersey, New York, and Connecticut. The industry, according to the census of manufactures of 1905, gave employment to 22,047 wage-earners, and of this number 15,432 were males 16 years of age or over.^(a) In addition, however, the manufacture of wool hats gave employment to 1,503 wage-earners, and the manufacture of hat and cap materials to 2,414.

The concentration of the industry in New Jersey early attracted the attention of qualified medical observers, and as far back as 1860 Dr. J. A. Freeman, of Orange, prepared an address on Mercurial Diseases among Hatters for the New Jersey state medical society. In 1878 Dr. L. Dennis, of Newark, prepared a report on Hatting as Affecting the Health of Operatives, at the request of the state board of health, which was published that year in the annual report of the board. In 1886, by request of the same authority, Dr. J. W. Stickler, of Orange, prepared an extended account of the Hygiene of Hat Manufacture and the Diseases of Hatters, including the personal examination of a large number of workmen for evidences of physical impairment in consequence of the industry. The medical investigations were amplified during the years 1889 to 1895 by an elaborate inquiry through the state bureau of labor statistics into the effects of the occupation on the trade life of persons employed in the industry, as part of a general investigation, including many other dangerous and unhealthy employments. The various investigations all confirm the generally accepted view of qualified authorities, that the manufacture of felt hats is attended with more or less health-injurious circumstances, but that some departments of the industry are decidedly more exposed to this risk than others. While the investigations have never been entirely conclusive, in the absence of thoroughly trustworthy statistics of mortality for the more important employments, felt cutters, hat makers, and sizers are apparently the most liable to respiratory and pulmonary diseases and subject to a death rate above the average for persons generally employed in felt hat manufacture. Other employments decidedly injurious to health are pouncing, singeing, steaming, drying, hardening, and

^a Census of Manufactures, 1905, Part I, p. 252.

mixing, in all of which considerable dust or other health-injurious circumstances increase the liability to respiratory and pulmonary diseases. Finishers, flangers, and curlers are important employments apparently less liable to these diseases, but the degree of difference is, in all probability, not great, since these occupations are often carried on under about the same conditions as other employments previously enumerated, the three occupations being frequently conducted in the same or in adjoining rooms. The improvements which have been introduced into the industry, including the inclosure of dust-producing machinery and the more effectual control of the dust generated during pouncing and finishing at the point of origin, has, no doubt, resulted in a marked improvement during very recent years. Many of the hat factories have been rebuilt and the conditions in the modern factories are decidedly better than in those constructed in former years.

The general vital statistics regarding hatters are very limited but fairly conclusive. According to the vital statistics of 1890 there were enumerated 14,222 hat and cap makers in the registration States of the United States, and of this number 356, or 2.5 per cent, had attained to the age of 65 years or over. The number of deaths from all causes in this group was 277, and of this number 94, or 33.9 per cent, were from consumption. The mortality from all causes for hatters was considerably higher in each age group than the corresponding average for this class of occupations, and at ages 25 to 44, inclusive, the death rate of hat and cap makers was 19.27 per 1,000, or more than twice the average rate in occupations of this class, which was returned as 9.18. The specific death rate from consumption was 6.61 per 1,000, and from respiratory diseases other than consumption, 2.95 per 1,000. The rates were high for all diseases except heart disease and suicide. The death rate from consumption was more than twice the average rate and extremely high in the cities of the registration States only, for which it was returned as 7.8 per 1,000. (*)

The vital statistics of the census of 1900 included the mortality occurring among 12,680 males of known ages 15 or over enumerated as being employed in this group of occupations. The number of deaths from all causes in this group was 228, and the corresponding death rate 18 per 1,000. The death rates per 1,000 of population, by divisional periods of life, were, at ages of 15 to 24, 5.40; at ages 25 to 44, 13.10; at ages 45 to 64 the rate was 32.96; and at ages 65 or over it was 173.8. The death rates of hat and cap makers were generally above the average for the manufacturing and mechanical industries class, being highest from consumption, heart disease,

* Vital Statistics, Eleventh Census, Part I, p. 138.

and pneumonia.^(a) For reasons not stated in the census report, the details regarding the mortality in this occupation were less fully reported in connection with the census of 1900 than in connection with that of 1890.

For some years the vital statistics of the United Hatters of North America have been published in semiannual reports, and combining their returns for the period June 1, 1898, to November 30, 1901, there occurred 412 deaths from all causes, and of this number 133, or 32.3 per cent, were from consumption. The number of deaths from respiratory diseases other than consumption was 52, or 12.6 per cent. Combining the deaths from consumption and from other respiratory diseases, there were 185 deaths from diseases of the lungs and air passages, or 44.9 per cent of the mortality from all causes.

The most recent English mortality statistics of hatters are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part, as follows:

The mortality in this occupation shows an excess at every stage of life, the excess being most marked at ages 20 to 25 and 65 and upward. In the main working period the comparative mortality figure is 1,137, or above the standard for all occupied and retired males by 13 per cent. Hatters appear to be specially liable to phthisis, the mortality from that disease exceeding the normal by 50 per cent, and also to other diseases of the respiratory system and to Bright's disease, the mortality from which is above the average by 40 per cent. Suicide is also frequent. On the other hand, the mortality from influenza, nervous diseases, and accident is below the average.^(b)

The recent English mortality statistics of hatters are entirely conclusive of the unfavorable effects of this industry on health. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is suggestive of conditions in this trade more or less unfavorable to life and health. The excess in the general death rate of hatters is met with at all ages, but the relative and actual excess is most pronounced at ages 45 or over. In this respect the mortality of hatters quite closely resembles the corresponding mortality of furriers and taxidermists.

^a Vital Statistics, Twelfth Census, Part I, p. cclxxxiv.

^b Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxi.

MORTALITY FROM ALL CAUSES AMONG HATTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for hatters.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.90	+ 0.46	119
20 to 24 years.....	4.41	6.19	+ 1.78	140
25 to 34 years.....	6.01	6.70	+ .69	111
35 to 44 years.....	10.22	11.44	+ 1.22	112
45 to 54 years.....	17.73	19.82	+ 2.09	112
55 to 64 years.....	31.01	35.97	+ 4.96	116
65 years or over.....	88.39	103.42	+15.03	117

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of hatters from consumption and other respiratory diseases is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that the mortality from consumption is excessive at all ages, but the excess is most marked at ages 20 to 54. The table further shows that the mortality of hatters from other respiratory diseases is above the average for occupied males generally at ages 45 or over, by from 1.60 to 6.10 per 1,000. The two tables derived from English sources fully confirm the previous conclusion that the mortality of hatters is excessive when proper comparison is made with the corresponding mortality of occupied males generally, and that this excess is largely because of the high degree of consumption frequency at ages 20 to 54. The table which follows requires no further comment and is otherwise self-explanatory:

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG HATTERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for hatters.			Death rate per 1,000 for all occupied males.	Death rate for hatters.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.61	+0.07	113	0.24	.....	.....	.....
20 to 24 years.....	1.55	3.47	+1.92	224	.48	0.30	-0.18	68
25 to 34 years.....	2.03	3.70	+1.67	182	.77	.....	.....	100
35 to 44 years.....	2.74	4.11	+1.37	150	1.06	1.33	-.33	80
45 to 54 years.....	3.04	4.76	+1.72	157	3.32	4.92	+1.60	148
55 to 64 years.....	2.16	2.17	+ .01	100	6.54	10.85	+4.31	166
65 years or over.....	1.11	.....	.....	.....	17.77	23.87	+6.10	124

The recorded industrial insurance mortality statistics of hatters include 832 deaths from all causes, of which 278, or 33.4 per cent, were deaths from consumption. Of the mortality of hatters from respiratory diseases other than consumption, 71 were from pneumonia, 4 from asthma, 12 from bronchitis, and 10 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 45.1 per cent of the mortality of hatters was from diseases of the lungs and air passages. The excess in the consumption mortality of hatters is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 55.4 were from consumption, against a normal expected proportion of 31.3. Very few deaths from consumption occurred among hatters at ages 65 or over, but the proportionate mortality was exceptionally high at young ages, having been 53.8 per cent at ages 15 to 24. The analysis of the consumption mortality of hatters in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG HATTERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for hatters from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of hatters, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Hatters.	Males in registration area, 1900 to 1906.
15 to 24 years.....	78	42	53.8	27.8
25 to 34 years.....	175	97	55.4	31.3
35 to 44 years.....	185	84	45.4	23.6
45 to 54 years.....	127	34	26.7	15.0
55 to 64 years.....	135	20	14.8	8.1
65 years or over.....	132	1	.8	2.7
Total.....	832	278	33.4	14.8

The preceding observations and statistical data confirm the conclusion that hatters as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 64, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

SILK MANUFACTURE.

Silk manufacture in the United States is a highly diversified industry, giving employment in 1905 to some 79,601 wage-earners, in 624 manufacturing establishments. Of the number employed 27,037

were adult males, or 34 per cent. (*) A large number of women, and children under 16 years of age, are employed in this industry, which offers exceptional opportunities for light and fairly remunerative employment particularly adapted to women and children. While the number of persons employed in the industry has materially increased within recent years, the principal increase has been chiefly in the number of women wage-earners, or to be specific, from about 35,000 in 1900 to a little over 45,000 in 1905. The actual extent of the silk industry, however, is greater than indicated by these statistics, since the manufacture of silk hosiery and silk knit goods is included in the hosiery and knitting industries generally. By products, the industry divides itself into the manufacture of broad silks of many varieties, ribbons, velvets, plushes, tapestry and upholstery goods, machine twists, floss, etc. How far the conditions affecting health vary in the different branches of the industry has not yet been determined with the required accuracy to warrant entirely safe conclusions.

The most important processes in silk manufacture are winding, reeling, spinning, throwing or twisting, warping, weaving, picking, cleansing, and dyeing. On account of the very large variety of goods manufactured and the admixture, according to requirements, of the silk with other textile materials, chiefly cotton and wool, the degree of dust exposure in the different employments varies considerably, so much so that no definite rule can be laid down which would clearly differentiate the health-injurious processes from those which are comparatively innocuous. The hygiene of employment in silk mills was carefully considered by Arlidge, whose opinion was decidedly in favor of silk manufacture as compared with the corresponding conditions affecting health in the manufacture of cotton, linen, or wool. In his opinion the silk industry stands lowest in the list of textile manufactures as a dust-producing and a health-destroying occupation, and is, apart from the general insanitary features surrounding all textile operations, practically devoid of evils originating in the quality of the material and its manipulation, excepting in one department, and that is where waste silk is worked or manipulated for subsequent manufacturing purposes. The processes of winding, twisting, reeling, and spinning, in the opinion of Arlidge, are accompanied by little or no dust where the best silk is in use, and he regards all of these as harmless to health. Since these observations were made a matter of record, however, it is necessary to keep in mind that the admixture of other textile fibers in the manufacture of mixed goods has very considerably increased—so much so that nearly 10,000,000 pounds of yarn other than silk were used by silk mills, according to the census of manufactures of 1905.

* Census of Manufactures, 1905, Part III, p. 161.

Regarding the manufacture of silk waste, Arlidge states that this material is derived either from mills where the best silk is employed, of which it represents, in a certain sense, the refuse; or else from a certain grade of cocoons received from abroad and differing widely in quality. Many of these are so mixed with dirt as to offer, to the uninstructed eye, no semblance of being silk at all, and it is these impure cocoons that give rise, in the preparatory stages of manufacture, to foul smells and dust. Arlidge refers to a report by Redgrave in 1872, to the effect that, "The dressing of waste silk is one of the most nauseous of occupations," which, however, may be rendered comparatively inoffensive and harmless by proper ventilating appliances.

The preparatory processes after the boiling of the cocoon are, according to Arlidge, conducted in what are called the dressing rooms, and it is almost exclusively in these rooms that dust is encountered. While many carding machines are inclosed and only give rise to dust at intervals when opened for any purpose, there are horizontally acting machines not admitting of inclosure by their present construction, which do throw off fine dust traceable on surrounding objects and perceptible as a haze in the atmosphere around. In addition to the dressing process, so-called gassing is decidedly injurious to health, since the burned minute particles of silk float in the air, producing the smell of combustion of animal matter to a perceptible degree and likewise a dust visible as a thin haze. The temperature in these rooms is, as a rule, excessive, while the atmosphere is grossly polluted unless artificial ventilation is provided. These observations of Arlidge are in marked contrast to the earlier conclusions of Doctor Greenhow, who conducted an inquiry into the mortality of towns in which the silk industry was concentrated during the early sixties. The mortality from consumption in these towns at that time was extremely high, but during the intervening period vast improvements have taken place and the mortality from consumption has been reduced to the normal of English towns generally. No really qualified investigation, however, has been made into the actual conditions affecting the health of workers in silk mills at the present time, and even Arlidge is forced to the conclusion that—

A certain amount of asthmatic breathing and bronchitis is, after long employment, set up by the dust of the dressing department and by that of gassing. And judging from the experience of the Macclesfield Infirmary, a considerable number of silk workers break down as age advances with symptoms of fibroid phthisis. Unfortunately there appears to have been no medical research into the pathology of such cases, and no statistical record kept. Further, the high temperature existing in certain workrooms can not be without effect on health. Indeed, the aspect of many of the women, their anæmia and other signs, betray the ills attending their calling.

The very favorable conclusions of Arlidge are also in contrast to the conclusions of Dr. Pierre Givre, who in 1890 published a treatise on tuberculosis among silk workers, chiefly in the silk district of Lyon. According to these researches, among a very considerable number of deaths of silk workers during a long period of years, including both sexes, the mortality from tuberculosis had equaled 35.6 per cent of the mortality from all causes. On contrasting the male with the female workers, the latter exhibited a decidedly higher proportion, while at the same time the deaths occurred at an earlier age. Doctor Givre's opinion was particularly unfavorable to the employments of winders and carders, compared with other branches of the industry. Additional statistical evidence regarding the hygiene of silk manufacture is referred to by Arlidge, who obtained from Dr. Henry Fernie, of Macclesfield, the statistics of 922 persons engaged in the silk trade treated as out-patients at the infirmary. Among this number 25 per cent were cases of either tubercular or respiratory diseases.

For a really conclusive opinion more data are required than thus far have been brought together, with special reference to essential differences in methods of manufacture according to the kind of goods manufactured. As previously stated, the industry lends itself peculiarly to the employment of women and children, and an examination of the age distribution proves that there are comparatively few persons of advanced ages employed in silk manufacture. The age distribution of 49,422 silk workers, 15 years of age or over, with distinction of sex, was as follows:

NUMBER AND PER CENT OF MALE AND OF FEMALE SILK WORKERS IN EACH AGE GROUP, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Male silk workers.		Female silk workers.	
	Number.	Per cent.	Number.	Per cent.
15 to 24 years.....	9,022	44.4	21,884	75.1
25 to 34 years.....	5,301	26.1	5,062	17.5
35 to 44 years.....	3,380	16.7	1,519	5.2
45 to 54 years.....	1,563	7.7	461	1.6
55 to 64 years.....	785	3.9	127	.4
65 years or over.....	250	1.2	48	.2
Total.....	20,301	100.0	29,121	100.0

The table emphasizes the concentration of employments in silk manufacture at the younger ages and the comparative infrequency of employment at ages over 45. Whether the comparatively small number of persons employed in old age is the result of heavy mortality following the early years of employment, or whether it is because of labor requirements more favorable to the employment of

young persons, can not be determined at the present time. The table, however, is decidedly suggestive and it probably has some connection with the higher mortality of silk workers than is normal to the general population, although a large number, no doubt, after suffering a temporary impairment, leave the industry for other employments, and they are thus lost sight of in the vital statistics of the trade.

While no conclusive investigation has been made to determine the health conditions in the different branches of the industry, it is probably quite safe to assume that employment in plush and velvet mills is a more dusty occupation than that in mills manufacturing sewing silk or the usual grade of ribbons and broad goods. In the plush mills, employment in the finishing rooms exposes to a considerable amount of dust. Also, in the shearing rooms there is considerable dust, which, however, is reduced by the required humidity of the atmosphere. In the brushing rooms there is considerable dust, and there is probably even more dust at the pegging and so-called tagging machines, which are difficult of exact description. Thus far no thorough investigation has been made, either in this country or abroad, which would warrant final conclusions as to whether the decidedly favorable opinion of Arlidge is warranted by present-day conditions, but as far as it is possible to judge the mortality of silk-mill workers and their liability to tubercular and respiratory diseases is somewhat below the average for persons employed in cotton and woolen mills. The most recent English mortality statistics of silk manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part, as follows:

The mortality of these workers is below the standard for occupied and retired males at all ages up to the fifty-fifth year, the defect being especially noticeable at the age group 25-35 years. Above the age of 55 years the rates exceed the standard. The comparative mortality figure in the main working period of life is 964, or 4 per cent below the average. These workers are liable to less than one-third of the standard mortality from accident, to one-half of that from influenza, and to two-thirds of that from respiratory diseases, and their mortality from alcoholism and liver disease, as well as from cancer, is also low. On the other hand, they show excessive mortality from phthisis, nervous diseases, Bright's disease, and suicide, especially from the two causes last mentioned.^a

The recent English mortality statistics for silk workers are quite conclusive of the more or less unfavorable effects of this industry on health as regards the more advanced periods of life. In the table which follows a comparison is made of the mortality from all causes of men in this group with occupied males generally, and the comparison shows that the death rates of silk workers were below the av-

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxxvii.

erage at ages 15 to 44, slightly above the average at ages 45 to 54, and decidedly so at 55 years or over, when the excess in the death rate was 5 per 1,000 at ages 55 to 64 and 19.16 at 65 or over.

MORTALITY FROM ALL CAUSES AMONG MALE SILK WORKERS COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement of the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate for male silk workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.30	- 0.14	94
20 to 24 years.....	4.41	3.27	- 1.14	74
25 to 34 years.....	6.01	4.12	- 1.89	69
35 to 44 years.....	10.22	8.56	- 1.66	84
45 to 54 years.....	17.73	17.90	+ .17	101
55 to 64 years.....	31.01	26.01	+ 5.00	116
65 years or over.....	88.39	107.55	+19.16	122

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of silk workers from consumption is compared with the normal mortality of occupied males from this disease, by divisional periods of life. The comparison shows that the mortality from consumption is excessive at ages 20 to 34, inclusive, and at ages 45 or over. The exceptions are of minor importance, but the comparison suggests a degree of consumption frequency materially above the average, or by from 0.27 to 1.53 per 1,000. The table which follows requires no further comment:

MORTALITY FROM CONSUMPTION AMONG MALE SILK WORKERS COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate for male silk workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.23	-0.31	43
20 to 24 years.....	1.55	1.82	+ .27	117
25 to 34 years.....	2.03	2.40	+ .37	118
35 to 44 years.....	2.74	2.05	- .69	75
45 to 54 years.....	3.04	3.95	+ .91	130
55 to 64 years.....	2.16	3.69	+1.53	171
65 years or over.....	1.11	2.00	+ .89	180

The recorded industrial insurance mortality statistics of silk workers include 295 deaths from all causes, of which 106, or 35.9 per cent, were from consumption. Of the mortality of silk workers from respiratory diseases other than consumption 21 were from pneumonia, 5 from asthma and bronchitis, and 7 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, 47.1 per cent of the mortality of silk workers was from diseases of the lungs and air passages. The excess in the consumption mortality of silk workers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 35 to 44, when out of every 100 deaths from all causes 60 were from consumption, against a normal expected proportion of 23.6. The analysis of the consumption mortality of silk-mill workers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG SILK WORKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for silk workers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of silk workers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Silk workers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	82	28	34.1	27.8
25 to 34 years.....	61	32	52.5	31.3
35 to 44 years.....	55	33	60.0	23.6
45 to 54 years.....	31	7	22.6	15.0
55 to 64 years.....	37	4	10.8	8.1
65 years or over.....	29	2	6.9	2.7
Total.....	295	106	35.9	14.8

The preceding observations and statistical data confirm the conclusion that silk workers as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

WOOLEN AND WORSTED MANUFACTURE.

The manufacture of woolen and worsted goods has, during recent years, developed into an American industry of very considerable proportions, and in 1905 gave employment to 143,458 wage-earners. Of

this number 75,717 were males, 56,749 females, and 10,992 children and young persons under 16 years of age. While an exact division of the industry into woolen and worsted manufacture is somewhat difficult, in approximate numbers there were 72,747 employed in the manufacture of woolen goods, 69,251 in the manufacture of worsted goods, in addition to which there were enumerated 681 wool pullers and 779 wool scourers.^(a) The importance of the woolen industry is gradually declining, while the manufacture of worsted goods is taking its place. Although the processes of manufacture are very much the same as in cotton textiles generally, the worsted industry is a very much more technical process, including some fifty well-defined subdivisions of labor. The most important of these are sorting, scouring, carding, combing, spinning, weaving, dyeing, and finishing. In nearly all of these processes the exposure to animal fiber dust is quite considerable, being somewhat greater in the manufacture of woolen than of worsted goods. The processes of scouring, dyeing, and fulling are comparatively free from dust, but steam, vapor, and dampness increase the disease liability of the workmen in these employments.

Wool sorting is quite a dusty employment, but the risk of so-called "wool-sorter's disease" is limited to the handling of certain grades of foreign wool, chiefly van-mohair, alpaca, East Indian cashmere, and camel's hair, all of which are imported from the Far East. Since these wools are usually imported by way of England they are there, under factory regulations, subjected to a disinfecting process, by which the risk of anthrax is reduced to a minimum. In no branch of the woolen industry is artificial ventilation and dust removal of greater importance than in wool and rag sorting, which, in common with the general risk of dust injury, has the additional risk of transmission of infectious diseases, chiefly anthrax and smallpox. An effective device for removing the dust in wool sorting has been described by Haldane in his lecture on the removal of dust and fumes of factories before the Royal Society of Arts.

The woolen and worsted industries are of such great complexity that only a few of the more important occupations can be considered at this time. Thackrah, in his comments upon the diseases peculiar to persons employed in the manufacture of woolen and worsted goods, observes:

Wool combers work in apartments which, from the fire employed to heat the combs, are kept at the temperature of about 80°. The fires are made of charcoal. From the evolution of carbonic-acid gas, when the windows are not sufficiently open, the men are occasionally affected with headache. In some of the manufactories an attempt

^a Census of Manufactures, 1905, Part III, p. 128.

has been made to heat the combs by means of steam, but the workmen complain that by this mode the rooms are made hotter and the combs colder; in other words that the increase of temperature is more diffused. A light dust arises from the wool, or rather perhaps from the soap retained by the wool after washing. It annoys the air tube and obliges some persons to leave the employ. The men, however, whom we found in the rooms appeared quite healthy, and we were informed that out of 100 individuals only 2 or 3 were absent from illness. * * * The heat of the apartments does not appear to shorten life. We have repeatedly seen at work men from 60 to 70 years of age.

The same authority says with reference to worsted spinners that—

Spinners of worsted, chiefly young persons, are exposed to considerable heat in rooms traversed by steam pipes and often deficient in ventilation. The thermometer, in November, we have found in the spinning rooms at 65° and 70°, and in the warping rooms, where steam pipes are not introduced, 58°, while in the open air it was 48°. In summer, of course, the temperature, particularly of the spinning rooms, is considerably higher. The rooms in most mills, though spacious, are too low. The windows are about the middle of the walls and no apertures are made above them for the admission of air. The labor is light and the posture varied. * * * The operatives have generally the appearance of health. Many, however, particularly at the commencement of the employ, suffer from headache and sickness, the result, I conceive, of the want of ventilation rather than the temperature of the rooms. Some can not bear the employ. The mills are generally in the country or at the outskirts of the town.

At the time, however, when Thackrah reported his observations the worsted industry had developed to only very small proportions, chiefly the manufacture of worsted handkerchiefs, fancy goods, and worsted stockings. The weavers employed in the manufacture of these goods were, in the opinion of Thackrah, subjected to some dust, which affected the respiration and rendered the employment less healthful than the corresponding occupation in cotton manufacture. This opinion has not been sustained by subsequent investigation, which would appear to prove conclusively that the manufacture of woolen and worsted goods is less injurious than employments in the manufacture of cotton goods.

During recent years the conditions of labor in the woolen and worsted industries have undergone a material improvement, largely as the result of the concentration of the industry in the elimination of many small factories not built in conformity to modern sanitary requirements as to air space, light, and ventilation. While important improvements have been made, it is still rare, however, to find an effective system of artificial dust removal, chiefly in the processes generating the largest quantities of dust—that is, the carding and combing branches of the industry. The amount of fly resulting from the various operations is considerable in both woolen and worsted manufacture and continuous cleaning is necessary, and this is practi-

cally all done by means of the ordinary sweeping process, much of which results in dust disturbance rather than in dust removal.

The woolen and worsted industries were very carefully considered by Arlidge in his treatise on the diseases of occupation. He calls attention to the fact that most of the health-injurious processes are those which have to do with the preparatory stages, and he describes these processes in their relation to health, in part, as follows:

In the first place, the bales have to be opened, and their contents being heaped upon large tables have to be sorted in order to separate their different qualities. Along with more or less dirt removed with the fleeces, the wool holds a considerable quantity of greasy matter. From this last it has to be freed by careful and repeated washings in alkaline fluids and by specially constructed machines. It has, in the next place, to be subjected to "wilying" (winnowing), "scribbling," and "carding machines" to remove every portion of dirt and to deliver it, as in the cotton manufacture, in the form of a "sliver" of fine fibers collected in a loose rope-like form. In the preliminary combing processes considerable dust is thrown off, but by the use of inclosed machines and of fans to withdraw it as fast as it is generated little escapes into the apartment to annoy or to injure. We owe it to the ingenuity of modern engineers that these preliminary operations have well-nigh ceased to be unhealthy.

Arlidge, as the result of his investigations, held that the dust from wool was more innocuous than that of cotton, and very much more so than the dust of flax, because of the inherent structure of the wool fiber and the fact that its animal origin makes it less irritating and less foreign to living animal tissue. Moreover, he held that when the woolen fibers reached the spinning frames they had to be lubricated with oil, which materially reduced the amount of dust generated during the subsequent manipulation. This conclusion, however, is subject to material modification in many mills, where the evidence of a considerable amount of dust being generated during the spinning process is readily observed by the amount of dust under and on the machinery and present in the atmosphere.

With special reference to worsted spinning and weaving, Arlidge observed that—

Other advantages attending the worsted spinning are that it is done dry and does not need the same degree of moist heat required in the other textile trades. Further, in the weaving of worsted a far lower and less humid temperature is called for than in the case of cotton weaving; while, what is of still greater moment, clay sizing and its emitted dust have no place.

Arlidge sums up his general conclusions regarding the health of persons employed in the woolen and worsted industry as follows:

The general conclusion respecting the worsted manufacture is that it is a healthy occupation. The artisans look less anæmic and sallow than cotton operatives, while their social and domestic position

appears more favorable. They likewise suffer less with respiratory diseases and consumption; but the proportion in which these prevail is in some degree regulated by the quality of wool used, that from Australia and the Cape being more dusty than English and therefore more provocative of bronchial irritation. Doctor Greenhow could not find that chest diseases and the mortality therefrom occurred in a higher ratio among the woollen workers of Bradford than with the general population.

Other writers on occupation diseases have given equally extended consideration to the industry, but, on the whole, the conclusions coincide with those of Arlidge, that employment in woollen and worsted manufacture, with the resulting exposure to animal fiber dust, is less dangerous to health than the corresponding employment in the manufacture of cotton and other vegetable fiber textiles.

Dr. B. W. Richardson held that the dust or fly of wool appeared to produce no really deleterious effects on the lungs, and that, in fact, the mortality of the workers in wool seemed to warrant the opinion that they were favorably exempted from disease, probably because the soft, oily dust of the wool protected the bronchial surfaces from irritation rather than that it irritated them. Tatham, writing with a better knowledge of the mortality statistics of the trade, confirms this opinion in his discussion of dust-producing occupations in *Oliver's Dangerous Trades*, from which the following is quoted:

Wool workers suffer much less severely from their occupation than do cotton operatives. In the weaving of woollen materials a lower and drier temperature is required than in the case of cotton weaving, and the mischief caused by "sizing" with china clay and other irritants has no place in woollen manufacture. Nevertheless, in certain of the processes, especially where inferior foreign wools are manufactured, a good deal of dust is disengaged, and this produces its ill effect on the lungs of the workers. It is also in connection with dirty or blood-stained foreign wools that the majority of cases of anthrax or wool sorters' disease have been observed from time to time which have been the subject of inquiry in past years by the medical department of the local government board.

It is worthy of notice that wool sorters are even more careless as regards exposure to cold and drafts than are even cotton workers, and their mortality from rheumatic fever is much higher, being double that experienced by agriculturists as a class. Wool workers have a comparative mortality figure from all causes which is somewhat above the average for occupied males generally, but is below that of other textile trades. Workers in wool appear to be remarkably free from intemperance, their mortality figure being less than one-fourth of the average. From diseases of the digestive system other than the liver wool workers die half as fast again as do occupied males generally, while from diseases of the nervous, respiratory, and urinary systems, as well as from cancer, the mortality of these workers is from 10 to 22 per cent in excess of that standard.

The Rhode Island occupation mortality statistics return specifically only wool sorters. During the ten years 1897 to 1906 there were 37 deaths from all causes recorded in Rhode Island under the title of wool sorter. Of this number 5, or 13.5 per cent, were from consumption, and 5, or 13.5 per cent, were from respiratory diseases other than consumption. The combined mortality from diseases of the lungs and air passages was 10, or 27 per cent, against 30.3 per cent expected on the basis of the mortality of all occupied males in Rhode Island. The numbers are too small to warrant a final conclusion, but the facts are presented to make the analysis complete.

The most recent English mortality statistics of woollen and worsted manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General, in part, as follows:

The mortality among these operatives exceeds the standard for occupied and retired males at ages 20 to 25, and over 55 years, but is below that standard at other ages. In the main working period of life the comparative mortality figure for wool workers is 984, or less than the standard figure by only 2 per cent. The mortality from alcoholism and liver disease is less than three-fourths and that from accident is less than half the standard. The mortality from cancer, phthisis, respiratory diseases, and suicide is also in each case below the average. On the other hand, the mortality from nervous and circulatory diseases slightly exceeds, and that from diabetes mellitus and from Bright's disease considerably exceeds the standard.^(*)

The recent English mortality statistics for persons engaged in woollen and worsted manufacture are fairly conclusive of the somewhat unfavorable effects of this industry on health, and decidedly so as regards the more advanced periods of life. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is suggestive of conditions in this trade more or less unfavorable to life and health. An excess in the general death rate of woollen and worsted workers is met with at ages 20 to 24, but at all other ages below 55 the mortality is below the normal, while at ages 55 to 64 the excess in the general death rate of woollen and worsted workers is 6.09 per 1,000, and at ages 65 or over it is 40.53 per 1,000.

^{*} Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. lxxxvii.

MORTALITY FROM ALL CAUSES AMONG MALE WOOLEN AND WORSTED WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000, for all occupied males.	Death rate for male woollen and worsted workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.19	- 0.25	90
20 to 24 years.....	4.41	5.03	+ .62	114
25 to 34 years.....	6.01	5.18	- .83	86
35 to 44 years.....	10.22	8.90	- 1.32	87
45 to 54 years.....	17.73	17.14	- .59	97
55 to 64 years.....	31.01	37.10	+ 6.09	120
65 years or over.....	88.39	128.92	+40.53	146

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of woollen and worsted workers from consumption and other respiratory diseases is compared with the normal mortality of occupied males from these diseases, by divisional periods of life. The comparison shows that the mortality from consumption was excessive at ages 15 to 24 and at 55 years or over. The table further shows that the mortality from other respiratory diseases was excessive at ages 15 to 19 and at 65 years or over. The two tables, derived from English experience, would seem to warrant the conclusion that the woollen and worsted industry as such is not decidedly injurious to health. The data, however, are subject to a word of caution, in that the woollen and worsted industry includes many employments which permit of a comparatively easy transfer to other industries and occupations, so it is quite possible that a fair proportion of those impaired because of continuous exposure to animal and fiber dust, leave the employment and seek more congenial and healthful occupations in other branches of industry. This view is in part susceptible of statistical proof by the comparative mortality data of occupied and of occupied and retired males in the woollen industry of England and Wales, which for the first time were tabulated for the three years ending with 1902. The excess in the death rate of occupied and retired males employed in this industry over the occupied only was very slight at ages under 35, but 0.32 per 1,000 at ages 35 to 44, 0.86 at 45 to 54, 3.83 at 55 to 64, and 18.19 at 65 years or over.

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG WOOLEN AND WORSTED WORKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.				Mortality from other diseases of the respiratory system.			
	Death rate per 1,000 for all occupied males.	Death rate for woollen and worsted workers.			Death rate per 1,000 for all occupied males.	Death rate for woollen and worsted workers.		
		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.		Rate per 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.09	+0.15	128	0.24	0.31	+0.07	129
20 to 24 years.....	1.55	2.38	+ .83	154	.48	.23	- .25	48
25 to 34 years.....	2.03	1.81	- .22	89	.77	.75	- .02	97
35 to 44 years.....	2.74	2.25	- .49	82	1.66	1.45	- .21	87
45 to 54 years.....	3.04	2.84	- .20	93	3.32	3.08	- .24	93
55 to 64 years.....	2.16	2.27	+ .11	105	6.54	6.46	- .08	99
65 years or over..	1.11	1.86	+ .75	168	17.77	25.44	+7.67	143

The recorded industrial insurance mortality statistics of woollen and worsted mill workers include 106 deaths, of which 26, or 24.5 per cent, were from consumption. Of the mortality of woollen-mill workers from respiratory diseases other than consumption, 8 were from pneumonia, 7 from asthma and bronchitis, and 2 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, it is found that 40.5 per cent of the mortality of woollen-mill workers was from diseases of the lungs and air passages. The excess in the consumption mortality of woollen-mill workers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at ages 25 to 34, when out of every 100 deaths from all causes 43.8 were from consumption, against a normal expected proportion of 31.3. The analysis of the consumption mortality of woollen-mill workers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG WOOLEN AND WORSTED WORKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for woolen and worsted workers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of woolen and worsted workers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Woolen and worsted workers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	20	7	35.0	27.8
25 to 34 years.....	16	7	43.8	31.3
35 to 44 years.....	14	5	35.7	22.6
45 to 54 years.....	19	4	21.1	15.0
55 to 64 years.....	24	3	12.5	8.1
65 years or over.....	13	.....	.....	2.7
Total.....	106	26	24.5	14.8

The preceding observations and statistical data confirm the conclusion that woolen and worsted workers in the United States as a class are subject to a high mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

CARPET AND RUG MANUFACTURE.

Carpet and rug manufacture may properly be considered a branch of the woolen and worsted industry, but it is only the weaving and finishing processes which require special consideration. The grade of yarn used probably has some bearing upon the quantity of dust generated during the process of manufacture, but it is in the so-called shearing and brushing that atmospheric pollution occurs in excess of similar conditions in woolen and worsted mills. The report of the Massachusetts state board of health on dangerous trades contains a brief reference to the sanitary aspects of the industry, from which the following is quoted:

The operation of carpet weaving is accompanied by much dust, and requires constant attention and keen watching for flaws and "skips" in the weaving. After a carpet or rug is woven it is inspected, sheared, and brushed. The shearing machines cut off all bits of fiber and other irregularities, and in so doing create considerable dust, much of which is coarse and heavy and does not long remain suspended in the air.

Five carpet factories visited employ about 6,000 persons, about 10 per cent of whom are between the ages of 14 and 16. The largest of these shows some departments in which poor light, excessive heat, moisture, and dust constitute the objectionable conditions. One large,

fairly well lighted room, 220 by 120 by 16 feet, and occupied by 33 persons, has so much fine cotton dust and fiber in the air that it is with difficulty one can see across it. This dust is very irritating to the nose and throat.

Some of the rooms are poorly lighted, some are overheated, and some are badly ventilated; and one large basement room, 285 by 60 by 13 feet, occupied by 150 women and girls winding yarns on bobbins, combines all three of these objectionable conditions.

The wool-picking room is well lighted, but the air is heavy with wool fiber, and is at the same time excessively hot. One large dusting machine is equipped with a fan and exhaust dust pipe which never have been used; indeed, there is no shafting to run the fan. The machine has been in use upward of five years, and the person who operates it has worn a handkerchief over nose and mouth ever since it was started. The work is exceedingly dusty and dirty.

The weaving rooms of the next largest of the five factories are large and well lighted, but the air contains a noticeable amount of dust. Most of the departments of this mill show commendable conditions.

In the third, many of the children between 14 and 16 are very small and poorly developed for their age, and are far too poorly developed to be allowed to work ten hours and twenty minutes for five days in the week. In many rooms the windows are too far apart, and the light is barely sufficient even in good clear weather. The older weavers complain of failing eyesight, due to working with poor light.

One of the mills of this establishment, although comparatively new, is poorly lighted in the picking, carding, winding, drawing, and roving rooms, but otherwise the conditions are good. In four of the weave rooms the ventilation is very inadequate, the light is poor, and the air is very dusty.

The fourth establishment in order is, in the main, poorly lighted and inadequately ventilated, and the weave rooms are very dusty. In four rooms in which yarns are dressed the steam boxes are so loosely constructed that much steam escapes and causes extreme heat and moisture. About one-tenth of the employees in this establishment look sickly.

The smallest factory of all, one which employs ordinarily 500 persons, has good light, adequate ventilation, and commendable weave rooms. The employees appear to be in good health.

The hygiene of carpet manufacture has not attracted much attention, probably because of the fact that most of the processes are practically identical with the corresponding processes in woolen and worsted manufacture. The occupation classification in the carpet industry, however, includes a number of employments peculiar to the trade, of which mention may be made of art-square weavers, cutters of chenille cloth, fringe knotters, jute binders, plush weavers, shearers, steamers, willowers, and wire sharpeners. Of these occupations, employment at the willowing machines is probably the most dusty, since it is here that the wool fibers are torn apart and the dust and dirt

removed. It is also probable that conditions in carpet-weaving rooms are less favorable on account of the coarser grade of yarn used and the material differences in loom construction. The weaving process itself is also quite different from the corresponding process of weaving in woolen and cotton textiles, and as far as it is possible to judge, the amount of dust generated during the weaving processes is greater in carpet and rug mills than in the corresponding processes of other branches of the textile industry. No qualified investigation, however, has been made which would warrant a final conclusion, nor has it been determined whether the amount of dust in the manufacture varies according to the varieties of carpets made, of which the most important are Wilton, Axminster, Kidderminster or ingrain, tapestry Brussels, and Venetian. The manufacture of matting is a separate industry, with exposure to vegetable fiber and mineral dusts, while in the manufacture of door mats the principal exposure is to mixed fiber dust. Arlidge sums up his conclusions regarding the hygiene of carpet making, briefly, as follows:

The wool used for carpet making is of coarse and short fiber; it is formed into a yarn, which is next wound on bobbins by child labor in readiness for the weavers' looms. Hand-loom weaving has been, for the most part, supplanted by the power loom, with the advantage of materially lessening the labor of the weavers. The manufacture of carpets is attended with considerable dust of a mixed character of wool and hemp, but no data are within reach to furnish information as to the extent in which it operates as a cause of disease.

The mortality of males employed in carpet manufacture was reported upon in the Supplement to the Fifty-fifth Annual Report of the Registrar-General of England and Wales. The number of men employed was comparatively small, having been only 8,532 at ages 15 or over, hardly warranting definite conclusions in view of the short period of three years for which the mortality data were returned. In general terms it was held that the death rates of carpet makers at the various age groups compared favorably not only with those of other textile workers but also with those of other occupied males. The comparative mortality was 873, which is 8 per cent below the standard. Among the causes of death of numerical importance consumption was 22 per cent in excess of the normal, and diseases of the respiratory system other than consumption were 11 per cent in excess. The mortality of carpet makers from diseases of the nervous, circulatory, digestive, and urinary systems appears to be below the average.

One fact which requires to be taken into consideration, however, is that in carpet weaving considerable physical strength is required, which accounts for the comparatively small proportion of women weavers. This, at least, is true of the weaving of Brussels carpet and probably applies to other grades. It is the opinion of those who are thoroughly familiar with the industry that men of excep-

tional physique are required, and naturally among such a class the death rate should be low unless very abnormally increased by special causes. The most recent English mortality statistics of carpet and rug manufacture are for the three years ending with 1902, referred to in the Supplement to the Sixty-fifth Annual Report of the Registrar-General in part as follows:

Here again the workers are too few in number to justify more than general examination. It appears that the mortality in this industry is below the standard for occupied and retired males at ages 25-45 years, but above it at all other ages. In the main working time of life the comparative mortality figure is 1,044, or 4 per cent above the standard. These workers show a fatality in excess of the average from cancer and from diseases of the nervous and circulatory systems, but in defect of the average from influenza, alcoholism, and liver disease, as well as from accident and suicide.^(a)

The recent English mortality statistics of carpet and rug makers are quite conclusive of the more or less unfavorable effect of this industry on health. In the table which follows a comparison is made of the mortality from all causes among men in this group with that of occupied males generally, and the result is decidedly suggestive of conditions in this trade more or less unfavorable to health and life, but in particular at very advanced ages, when at 65 years or over the excess in the death rate of carpet and rug makers was 28.38 per 1,000.

MORTALITY FROM ALL CAUSES AMONG MALE CARPET AND RUG MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 for all occupied males.	Death rate of male carpet and rug workers.		
		Rate per 1,000.	Greater (+) or less (—) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	2.44	2.89	+ 0.45	118
20 to 24 years.....	4.41	5.19	+ .78	118
25 to 34 years.....	6.01	5.86	— .15	98
35 to 44 years.....	10.22	9.43	— .79	92
45 to 54 years.....	17.73	18.30	+ .57	103
55 to 64 years.....	31.01	33.94	+ 2.93	109
65 years or over.....	88.39	116.77	+28.38	132

The preceding table is self-explanatory and requires no further comment. A more extended comparison is made in the next table, in which the mortality of carpet and rug makers from consumption is compared with the normal mortality of occupied males from this dis-

^a Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, p. xc.

ease, by divisional periods of life. The comparison shows that the mortality from consumption was above the average at ages 15 to 24, 35 to 44, and 55 to 64. Making allowance for the rather small numbers from which this table is derived, it is probably safe to assume that if the numerical basis were larger it would more conclusively indicate a comparatively high degree of consumption frequency among men in this employment, at least throughout the active working period of life.

MORTALITY FROM CONSUMPTION AMONG MALE CARPET AND RUG MAKERS, COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Mortality from consumption.			
	Death rate per 1,000 for all occupied males.	Death rate of male carpet and rug makers.		
		Rate for 1,000.	Greater (+) or less (-) than rate for all occupied males.	Ratio to rate for all occupied males.
15 to 19 years.....	0.54	0.64	+0.10	119
20 to 24 years.....	1.55	2.59	+1.04	167
25 to 34 years.....	2.03	1.41	— .62	69
35 to 44 years.....	2.74	3.14	+ .40	115
45 to 54 years.....	3.04	2.94	— .10	97
55 to 64 years.....	2.16	2.42	+ .26	112
65 years or over.....	1.11	1.00	— .11	90

The recorded industrial insurance mortality statistics of carpet and rug makers include 155 deaths from all causes, of which 37, or 23.9 per cent, were from consumption. Of the mortality of carpet and rug makers from respiratory diseases other than consumption, 16 were from pneumonia, 6 from asthma and bronchitis, and 4 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, it is found that 40.6 per cent of the mortality of carpet and rug makers was from diseases of the lungs and air passages. The excess in the consumption mortality of carpet and rug makers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at 15 to 24, when out of every 100 deaths from all causes, 52.9 were from consumption, against a normal expected proportion of 27.8. The analysis of the consumption mortality of carpet and rug makers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG CARPET AND RUG MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for carpet and rug makers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of carpet and rug makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Carpet and rug makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	17	9	52.9	27.8
25 to 34 years.....	22	10	46.5	31.8
35 to 44 years.....	17	6	35.3	23.6
45 to 54 years.....	24	5	20.8	15.0
55 to 64 years.....	34	4	11.8	8.1
65 years or over.....	41	3	7.3	2.7
Total.....	155	37	23.9	14.8

The preceding observations and statistical data confirm the conclusion that carpet and rug makers in the United States are as a class subject to an excessive mortality from consumption, but in particular at ages 15 to 44, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

SHODDY MANUFACTURE.

Shoddy manufacture is an important branch of the woolen and worsted industry, although the number of wage-earners employed is comparatively small. In 1905 there were 97 establishments manufacturing shoddy in the United States, employing 2,089 wage-earners, compared with 1,926 in 1900, an increase of 8.5 per cent during the intervening quinquennial period. Of the number of persons employed, 1,625 were adult males, 458 were women, and 6 were children under 16 years of age.^a The materials used in shoddy manufacture are chiefly woolen and worsted rags, including tailors' clippings and wool extract, which is the wool fiber derived from rags, freed by a process known as carbonizing of the vegetable material with which it may have been intermixed, such as cotton and other vegetable fiber. Most of the shoddy made at the present time is all wool, and it is an error to assume that all shoddy goods are really undesirable for wearing purposes, since a very considerable proportion is cloth made wholly of wool but produced at a price which affords to poor people a satisfactory article of wear. It is also an error to assume that through shoddy loathsome diseases are conveyed to the wearer, except possibly in exceedingly rare instances, since the process of shoddy manufacture i

^a Census of Manufactures, 1905, Part III, p. 116.

such as to insure absolute cleanliness and the destruction of all active germs whether innocuous or pathogenic. This statement of facts is derived in part from the special census report on textiles, in which the shoddy industry is considered at some length. It is pointed out in that report that new wool or animal hair is always the basis of the yarn intermixed with a certain amount of shoddy, the fiber of which is too short to be carded and spun alone. While the completed cloth is not as durable as the cloth made from new wool, it is by no means lacking in wearing quality, as is commonly supposed, for as pointed out in the census report just referred to, shoddy in fact is one of the most useful of modern by-products in manufacture, in which the utilization of waste is an important item of economy. "Shoddy is not," in the words of the report, "woolen rags ground to powder, but rags that are picked, leaving a good staple suitable for spinning. Some of the most substantial of goods that are made, doing serviceable work for a number of years, contain a portion of shoddy mixed with wool." The process of converting the rags into wool fiber suitable for carding consists of a picking process in a machine known as a "shoddy-picker," and this constitutes a very dusty process which no doubt gives rise to health-injurious circumstances, to which, in part, reference has been made in the discussion of the hygiene of the paper industry, to which subsequent reference will be made in discussing rag collecting and rag sorting as a separate occupation. An essential difference, however, has to be kept in mind, and that is that only woollen and worsted rags are used in shoddy manufacture, while cotton and linen rags are used in paper manufacture.

In discussing the whole subject of rags and their products in relation to health, Mr. John A. E. Stuart, medical officer of health, Batley, Yorkshire, refers to the manufacture of shoddy, in part, as follows:

The dust which rises from rag machines consists of particles of wool and also of filth adherent to the various kinds of rags. It is highly irritating to all the respiratory passages, especially in those who are novices at the trade, but older hands become inured to it and tolerate it well. A train of symptoms is developed, called "shoddy fever." It is accompanied by high fever, with nasal catarrh and frontal headache, and a certain amount of bronchial catarrh. It is ushered in by shivering, malaise, and general muscular pain. It is almost indistinguishable from epidemic influenza, and if treated on similar lines recovery is soon secured. The only difference is that the catarrhal symptoms are the result of local irritation, and, consequently, when that is removed, the febrile condition soon subsides. Shoddy fever is easily induced in persons who have been out of the mill for a few weeks and return to work, in persons suffering from general catarrh, or in habitual drunkards.

A distinction is made by English writers between shoddy and mungo, the former being made from soft rags and the latter from

cloth rags, while the commoner kind of flocks, so called, are manufactured from a variety of raw materials, including the refuse of the shoddy trade, while the superior qualities are manufactured from the better grade of raw material. The lowest class of flocks is made from old carpets, with a backing of hemp or other vegetable fiber, and the product is used for stuffing beds and articles of furniture. The preliminary methods of manufacture of shoddy, mungo, and flocks are practically the same. "Flock fever" may here be referred to. This is met with in flock manufacture, and upholsterers working with flocks are occasionally sufferers from the dust. According to Stuart, workers in shoddy mills suffer from bronchitis and emphysema of the lungs, but those who do so are the older men, who began to work before so much oil was used with the rags as is at present the case, at least in English shoddy factories. The process is known as carbonizing, which is applied to rags which have a certain amount of cotton in them, and is stated to be occasionally the cause of bronchitis and emphysema, but men working in carbonizing mills state that it is quite exceptional for men to be off on account of illness.^(*)

Arlidge has described the process of shoddy manufacture in more detail than any other writer on the subject, and his observations and conclusions are quoted, in part, as follows:

The first operation consists in a more careful separation of the woolen from cotton and linen rags, as received from the rag dealers. It is one attended by the evolution of much dirty dust obnoxious to the respiratory organs, and now and then charged with animal poisons of a contagious or infectious nature. As an entirely unskilled operation, bringing small reward, sorting is undertaken by a lower class of female workers, indifferently careful of their own sanitary well-being.

The sorted rags are next torn up by a machine called a "devil," into small fragments. This process is necessarily a most dusty and otherwise objectionable one, but as it is done in an inclosed machine, comparatively little dust escapes into the surrounding air. The heavier particles fall to the bottom, whilst the lighter are driven by a strong blast of air, blown through the machine by a fan, along a capacious tube or conduit, and disposed of in an outside place. * * *

A further tearing apart, scribbling, or grinding is accomplished by a rough carding process, whereby a disintegrated mass of finely broken up wool fibers is obtained. After the free addition of vegetable oil to this material, it is transferred to "wilying" and roving machines, from which it emerges as a filmy sheet, which is immediately, by a semirotary action of the machine, converted into a "shiver," ready for future spinning and weaving.

The addition of the oil to the carded material has the great sanitary gain of obviating the emission of dust in the subsequent operations. Whilst in the disintegrated shape, additions of new wool and

^(*) For a technical description of the process of carbonizing and the manufacture of shoddy, see *Principles of Woolen Spinning*, by Howard Priestman, p. 46 et seq. New York, 1908.

of cotton are made. The wool used for cloth making is what is known as short wool, and is not suitable to the worsted spinners.

After the cloth is woven it passes through manifold other operations. Those first pursued are intended to remove defects in the tissue, and to fit it for dyeing and pressing. Others that follow are fulling (beating the cloth by heavy weights), dressing, raising the pile by teazles fixed in revolving frames, drying in hot chambers, shearing or cutting down the pile, and some finishing processes, such as subjecting the cloth to steam in order to remove the gloss consequent on previous pressure between steam rollers.

The only sanitary conditions to be found in these sundry proceedings requiring notice are the dust given off when the pile is raised in dry cloth; the elevated temperature of the drying room, reaching as it does 130° and upward, and the steam generated in the last operation described. Shearing is a comparatively leisurely proceeding, and the fine shavings cut off have a cohesive nature which opposes their diffusion in the form of dust. In the other departments enumerated, the work is performed by adult men, who are also few in number.

These observations are in part not quite applicable to American conditions, but no descriptive account of shoddy manufacture in this country has been made a matter of record with special reference to the hygienic circumstances of the occupation. In a large measure, of course, the processes subsequent to the preparation of the material for spinning and weaving are identical with those of woolen and worsted manufacture, but it is quite probable that the amount of dust generated during these processes is somewhat larger in shoddy manufacture. The investigations of Arlidge do not confirm similar inquiries as to the frequency of shoddy fever at the present time, but it is quite probable that there are sufficient variations in the methods of manufacturing, especially in the grades of rags handled, which may easily account for the absence of shoddy fever in one locality and its occurrence in another.

These brief observations are concluded by an extract on the manufacture of shoddy, included in a report on dangerous occupations by the state board of health of Massachusetts, published in 1907:

Shoddy is made from woolen rags, which come ordinarily to the mill in the form of bales. The first process, after the bales are opened, is that of sorting, which is done by women, who pick out all cotton rags, silk mixtures, buttons, and other foreign matters. The selected rags are treated in a large vat with dilute sulphuric acid, which attacks and destroys all cotton fibers which may be present, and then they are removed from the bath and allowed to drain. Next they are spread on racks over steam pipes, and dried at a temperature of about 100° F. in a confined space, which, before the dried rags are removed each day, is thoroughly ventilated by opening the windows and operating a blower, so that the men who do the work may not be exposed to the fumes. The rags are next washed, and then are picked apart by machinery. The product is a pure wool of short fiber and

very clean, which is sold either dyed or undyed. Two establishments of this class were examined, one of which is poorly lighted, inadequately ventilated, dusty, and ill kept; the other is light, clean, and well ventilated. Some of the women employed appeared to be in poor physical condition.

There are no official vital statistics of this occupation, but it is evident that while the circumstances of the employment are apparently decidedly objectionable, and while the dust generated during certain processes is considerable, the evidence that the employment itself is distinctly injurious to health is not a matter of trustworthy record, nor is it even conclusively evident that there is any particular amount of disease caused by employment even in the most objectionable branches of the industry which have to do with rag sorting and grinding, which will be subsequently considered as a separate occupation.

THE RAG INDUSTRY.

Rag collecting, sorting, and grinding, for subsequent use in paper mills, shoddy factories, and for other industrial purposes, include a group of occupations peculiarly exposed to the risk of dust inhalation, but where the dust is of such a mixed character that it is extremely difficult to define with accuracy the quality of the dust or the character of its ingredients. The conditions under which this work is carried on vary so widely, according to locality and circumstances, that no definite line can be drawn. The employment has always attracted the attention of those who have written on the hygiene of occupations, chiefly because of the low status of the persons employed and the high degree of theoretical risk to infectious diseases, and the probably health-injurious results otherwise due to the continuous and considerable inhalation of health-injurious dust. Since previous references have been already made to this employment in discussing paper and shoddy manufacture, it is only necessary here to very briefly restate the general facts of the sanitary aspects of the industry as they have been presented by the most recent authorities on the subject.

Dr. B. W. Richardson, writing in 1876, referred to an earlier article in the *Journal of Public Health* for January, 1859, by Mr. J. J. Murray, of Edinburgh, who had investigated the health of those who worked among rags, including such as collected junk and other second-hand materials. According to Richardson, "Mr. Murray expected, very naturally, that he should find amongst the workers in these tattered and filthy stores some suffering from contagion, others from the products of decay of the animal and vegetable constituents of the rags; others from inhaling and swallowing dust. An inquiry made by him at twenty-three paper mills to which rags were sent and

of twenty-three rag collectors in Edinburgh led to the curious return that epidemic or contagious disease from this source was practically unknown amongst workers in rags, that there was no evidence of disease from the decomposition, but that some workers suffered from bronchial affections, cough, and shortness of breath from inhaling the dust which is cast off in large quantities from the rags, when they are made to revolve in the wire-cloth cylinder which is used to free them from dirt and dust." The paper makers of whom inquiry was made as to diseases met with among workers in rags were of the opinion that, with the exception of the effects of dust, there was no unfavorable circumstance, and they referred to one employer who, during thirty years, with an average of 10 employees handling 200 tons of rags a year, reported only one death during a period of ten years.^(*) Many similar investigations made during the intervening period have led to very much the same conclusions. There is no doubt that infectious diseases are conveyed through rags, and the experience in Massachusetts, at least at Holyoke, has been to the effect that outbreaks of smallpox have been of greater frequency in that locality than in any other portion of the State, while according to D'Arcy Power, writing in *Oliver's Dangerous Trades*, "anthrax or charbon, sometimes known as splenic fever, or malignant postule," is occasionally conveyed through rags to rag sorters, upholsterers, mattress makers, etc., but cases of this disease, in this country at least, have been extremely rare.

Dr. John A. E. Stuart, in an article on "Rags and their products in relation to health," contributed to the same work on dangerous trades, expressed the opinion that people who sorted rags were occasionally bronchitic and asthmatic from the dust which arises from them, but he had seldom met with this condition in rag sorters, although he had known individuals who had been compelled to wear respirators when sorting on account of the dust met with in the occupation. He states that—

In the case of very dirty rags derived from dust heaps, rags which have been exposed to rain in many cases, it is probable that after drying the dust would be of a septic character and might induce sore throat. Rags from surgical hospitals are decidedly dangerous. Most persons who work as sorters are infested with fleas, which simply swarm among the rags, especially the mungo variety.

Thomas Oliver, M. D., in his treatise on *Diseases of Occupation*, after observing that rag sorters in England are generally women and that the work is anything but pleasant, states that—

This is especially the case with woollen rags, for they so frequently harbor fleas and other pests. All bundles of rags before being opened ought, therefore, to be first disinfected so as to destroy para-

* *Scientific American Supplement*, No. 10, March 4, 1876.

sites, and since rags from the surgical wards of hospitals and private patients often contain septic material, the importance of making disinfection obligatory is at once apparent. It is when the bundles are first opened that the danger is greatest. The dust given off is irritating to the respiratory passages and causes dryness of the throat. During the grinding of the rags by machinery considerable quantities of dust are thrown off, inhalation of which is extremely trying to new hands, but which has little or no immediate effects on the older work people. Those persons who are new to the trade develop what is known as "shoddy fever," the symptoms of which are a rise of temperature, severe headache, signs of bronchial catarrh, and running at the nose. The work people shiver as if they were going to have a severe fever, and they complain of muscular pains. The symptoms are not unlike those met with in influenza. They rapidly decline on the work people absenting themselves from the factory for a few days, but they are apt, in many people, to recur on their return to work. Rags which contain a good deal of cotton have to be carbonized by being plunged into a bath of sulphuric or hydrochloric acid. By this means the cellulose or vegetable part of the fiber is destroyed and the wool can be thus extracted from cotton fabrics. When the rags are subsequently heated to dryness and are beaten, a considerable quantity of fine dust is evolved, some of which is inflammable and may be the cause of an explosion.

In this connection a brief reference may be made to the handling of old paper received at paper mills for the purpose of being reconverted into new paper, and which in all essentials resembles the handling, sorting, and grinding of cotton and linen rags. Old paper, according to the report of the Massachusetts state board of health, is received in the form of bales, which are opened by men and sorted by women and girls. It is then conveyed to the duster on an endless belt, and in this machine it is freed from dust and torn into pieces by means of revolving wooden rolls bearing iron pins. The pieces of paper are then sorted over like rags, but are not put through the choppers, passing immediately from the dusters, so called, to an open cooking tub, subsequent to which the dust factor is reduced to a minimum. The results of the investigations by the Massachusetts state board of health are summed up as follows:

From the above description it will have been noted that from the opening of the bales of rags or paper to the cooking process the various steps involve exposure to varying quantities of dust, the greatest amount being given off in the earliest operations. It appears that, no matter how constructed, how carefully inclosed, how well provided with blowers and dust flues, a certain amount of dust is inevitable in the rooms where the threshers and choppers are installed and operated, excepting when unusually clean materials are being handled. If the machines are loosely sheathed or are not adequately equipped with dust-removal devices, the amount given off may be considerable to enormous, according to material. Unless the most dusty rooms are tightly partitioned off from other less dusty ones—

as, for example, a threshing from a sorting room—the amount of dust in the air in the latter must necessarily be augmented. In a number of the mills visited the air of the whole rag department was observed to be filled with dust and lint.

The character of the dust brought in with rags varies considerably, as would naturally be surmised from their many different places of origin. Some of the employees state that while at first they suffered from sore throat, cough, and loss of sleep, after a time they became so habituated that only an occasional bale causes any discomfort. In some mills it was observed that the dust was far more irritating than that met with in others; especially is this true of those in which burlap is used. Some men assert that the dust from rags of one color may be worse than that from the same kind of cloth differently dyed. Some say that some bales are sickening in their effects, even to old hands.

Of the threshing rooms visited, a very small number, in which the machines were exceptionally good and where the cleanest grade of rags were being handled, showed no dust; somewhat more, equipped with the same grade of machines and working on the same kind of material, showed but little dust; and the remainder showed considerable to much. About 11 per cent of the sorting rooms were dustless, about 25 per cent were not very dusty, and the balance showed considerable to much. Of the cutting rooms, about 7 per cent showed little or none and the remainder considerable to much. In a number of establishments sorting is conducted in large, airy, well-lighted, mechanically ventilated rooms; but in some of these cutting machines have been installed, and they create considerable dust. Indeed, in the matter of separation of the several processes mills vary; in some the duster and cutter machines are installed in separate rooms, in some they are in the same room.

In a majority of the mills visited a portion of the employees are exposed to an excessive quantity of dirt, dust, and lint; and in most of this majority the persons so exposed show not a few who are pale and sickly in appearance. In 19 mills girls under 18 years of age were noted as being employed, in no great numbers, in rooms which were very dusty.

In the department where the paper is actually made there is no dust, but the temperature is sometimes excessive and the air saturated with moisture. The latter condition is not only promotive of discomfort, but exposes the paper to damage through condensation and dropping, wherefore exhaust ventilation is commonly resorted to.

The paper industry, being one which exposes its followers to every kind of dust and dirt which can be carried in rags, is naturally looked upon by many as a dangerous trade. It is unfortunate that it is impossible from statistics available to determine in what relation this industry stands to others of the dusty occupations. The death certificates of the city of Holyoke, the center of the business in this State, were examined; but they proved to be too indefinite for use, since the terms "paper worker" and "mill hand" are commonly applied to all employees, whether engaged in the dusty or nondusty processes. Comparing, however, the death rates from tuberculosis, pneumonia, and bronchitis during the years 1901–1904 with those of

the State at large, it was found that the Holyoke rates were under, rather than over, the average.

There are no vital statistics of this employment nor any published industrial mortality experience, but the foregoing observations, based upon careful inquiry into the actual conditions under which work is carried on in this branch of industry, would seem to warrant the opinion that there are serious health-injurious circumstances connected with the employment, but for a definite conclusion there are at present no satisfactory statistical data for the United States.

UPHOLSTERERS AND HAIR MATTRESS MAKERS.

Upholstering is a well-defined trade, including the making and renovating of mattresses, but in occupation vital statistics the employment is, as a rule, included with other more or less dissimilar occupations. In the vital statistics of the census of 1890 and that of 1900, as well as in the occupation mortality statistics for England and Wales, upholsterers are included with cabinetmakers, for which there is but very slight warrant in practical experience. As a result the statistics are not entirely determining for cabinetmakers any more than they are conclusive for upholsterers. Since it is rare that a cabinetmaker also performs the duties of an upholsterer, and vice versa, it would seem advisable to consider this occupation entirely separate and distinct, and more so in view of the fact that the exposure to health-injurious dust is chiefly that of vegetable and animal fiber dust in contrast to the exposure to wood and mineral dusts in the work of the cabinetmaker. It is fortunate that in the occupation statistics of the census the employment has been kept separate, and it is of both interest and value to note that out of 28,001 male upholsterers, aged 16 or over, 977, or 3.5 per cent, had attained to ages 65 or over.^(a)

The work of the upholsterer consists chiefly in the covering, lining, and stuffing of upholstered furniture, while mattress making and renovating practically constitutes a separate trade. To a limited extent upholsterers are employed in the renovating of feather pillows and mattresses, but this practice never has attained to considerable proportions in this country, though it is extensively followed abroad. Mattresses are made chiefly of curled hair, moss, corn husks, straw, and flock, and the conditions vary so much that it is very difficult, if not next to impossible, to define with accuracy the kind of dust to which upholsterers are chiefly exposed. Both Arlidge and Oliver have discussed the hygiene of the upholsterer's trade. Arlidge points

^a Report of the Twelfth Census on Occupations, page 18.

out that the upholsterer's occupation is one which is concerned with the handling of feathers, flock, down, hair, etc., each and all being materials laden with dust and almost necessarily productive of respiratory troubles, particularly in the preparatory operation of cleansing by means of beating and washing. Arlidge treats at some length of flock making, which has been referred to under "shoddy manufacture." Of the large number of miscellaneous materials used by upholsterers, all of which are more or less productive of dust during the necessary manipulation, Arlidge mentions horse and cow hair, feathers, wool waste, cotton, flock, refuse of raw cotton, straw, cocoanut fibers, and seaweed. Most of these substances, in his opinion, are harmless unless they have been previously used or in some other way have acquired infectious qualities. Oliver is also of the opinion that the dust of feathers, flock, hair, etc., as produced in the upholsterer's occupation, is provocative of respiratory troubles. He holds that if the rags, feathers, and hair have not been previously cleansed the dust not only causes bronchial irritation, but may be the means of causing infectious diseases, such as smallpox, erysipelas, and intestinal derangements, such as vomiting and diarrhea.

Oliver refers to the manufacture of mattresses as an unhealthful occupation on account of the dust that escapes from wool and horsehair during the operation of carding, causing cough, difficulty in breathing, and retching, and if the materials have not been properly sterilized the dust may, in his opinion, cause blood poisoning. He refers to a well-known reference in the treatise by Ramazzini on the diseases of the Jews, who were at that time engaged chiefly in the handling or remaking of old materials, just as at the present time the secondhand trade is practically limited to the Hebrew race. Ramazzini states that in the beating of the old wool, which had been daubed with filth, a great deal of dust was inhaled, which disposed the workmen to a violent cough and a difficulty of breathing, and that he himself had observed those who had followed this occupation to have reduced themselves to an incurable consumption.

The reference to this aspect of the employment by Oliver is as follows:

Mattresses that have been lain upon by persons who have died of infectious diseases occasionally find their way into third-rate upholsterers' shops, where their contents are picked and mattresses are remade. It is very dusty work when the picking is done by hand, and, besides, there escapes an unpleasant, sickening odor which causes headache and a feeling of malaise. When mattresses have become fouled in places by discharges from patients suffering from infectious diseases, considerable risk is incurred by those who by hand tease the contents of such bespoiled bedding.

In the Southern States large quantities of so-called Spanish moss are gathered and subjected to a process known as moss ginning, to

prepare the material for mattress making and other purposes in upholstery, either alone or as a mixture with hair or other products. The work is extremely dusty, and the character of the dust inhaled has not been properly determined, consisting, however, chiefly of earthy matter and vegetable fiber.

The upholsterer's employment has been already referred to in the discussion of the vital statistics of cabinetmakers, and while the statistical facts can not be separately stated the employments, as a group, are evidently subject to a decidedly high mortality from consumption. The results of the census investigation in 1890 were fully confirmed by the subsequent census returns for 1900, proving that the death rate of cabinetmakers and upholsterers as a group was excessive from consumption and other diseases of the respiratory system. Since only the rates for 1900 were referred to under cabinetmakers, the rates for 1890 are here included. The consumption death rates of cabinetmakers and upholsterers during that year were 4.57 per 1,000 in the registration States, and nearly 5 per 1,000 in the registration cities only, while the mortality from other respiratory diseases as a group was 3.03 per 1,000 in the registration States and 3.45 in the registration cities.

The occupation mortality statistics of Rhode Island for the decade 1897 to 1906 returned only 25 deaths of upholsterers from all causes. Of this number, 6, or 24 per cent, were from consumption, against 17.8 per cent expected on the basis of the mortality of all occupied males in the State. The mortality from respiratory diseases other than consumption was returned as 3 deaths, or 12 per cent of the total, against 12.5 per cent expected. Of the total mortality of upholsterers, 9 deaths, or 36 per cent, were from diseases of the lungs and air passages, against a normal expected proportion of 30.3 per cent for all occupied males in Rhode Island.

The recorded industrial insurance mortality statistics of upholsterers include 381 deaths, of which 118, or 31 per cent, were from consumption. Of the mortality of upholsterers from respiratory diseases other than consumption, 33 deaths were from pneumonia, 5 from asthma and bronchitis, and 8 from less frequent respiratory diseases. If the deaths from consumption and from other respiratory diseases are combined, it is found that 43 per cent of the mortality of upholsterers was from disease of the lungs and air passages. The excess in the consumption mortality of upholsterers is still more clearly brought out in the tabular presentation of the proportionate mortality from this disease by divisional periods of life. While the consumption mortality was excessive at all ages, the excess was most pronounced at 25 to 34, when, out of every 100 deaths from all causes, 58.5 were from consumption, against a normal expected proportion

of 31.3. The analysis of the consumption mortality of upholsterers in detail is set forth in the following table:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG UPHOLSTERERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for upholsterers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of upholsterers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Upholsterers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	39	15	38.5	27.8
25 to 34 years.....	65	38	58.5	31.3
35 to 44 years.....	79	38	48.1	23.6
45 to 54 years.....	73	18	24.7	15.0
55 to 64 years.....	62	3	4.8	8.1
65 years or over.....	63	6	9.5	2.7
Total.....	381	118	31.0	14.8

The recorded industrial insurance mortality statistics of mattress makers include 41 deaths, of which 16, or 39 per cent, were from consumption. There were 6 deaths of mattress makers from respiratory diseases other than consumption, all of these having been caused by pneumonia. If the deaths from consumption and from other respiratory diseases are combined, it is found that 53.7 per cent of the total mortality of mattress makers was from diseases of the lungs and air passages. While the aggregate number of deaths of mattress makers is too small to warrant final conclusions, the statistics are given in detail for the reason that mattress making and upholstering are closely related and the consideration of the two employments may very properly be combined. The consumption mortality of mattress makers is shown to have been in excess of the normal at all ages and in this respect the statistics confirm those for upholsterers. The analysis of the mortality of mattress makers from consumption is set forth in detail in the table below:

PROPORTIONATE MORTALITY FROM CONSUMPTION AMONG MATTRESS MAKERS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for mattress makers from experience of an industrial insurance company; figures for males in the registration area computed from mortality statistics of the United States census.]

Age at death.	Deaths of mattress makers, 1897 to 1906, due to—		Per cent of deaths due to consumption among—	
	All causes.	Consumption.	Mattress makers.	Males in registration area, 1900 to 1906.
15 to 24 years.....	9	4	44.4	27.8
25 to 34 years.....	7	3	42.9	31.3
35 to 44 years.....	11	4	36.4	23.6
45 to 54 years.....	5	2	40.0	15.0
55 to 64 years.....	8	3	37.5	8.1
65 years or over.....	1	.....	.....	2.7
Total.....	41	16	39.0	14.8

The available information confirms the conclusion that upholsterers and mattress makers as a class are subject to an excessive mortality from consumption, but in particular at ages 15 to 54, and this excess, in view of the conditions of labor briefly described, is in a large measure the result of health-injurious circumstances connected with the employment.

SUMMARY OF CONCLUSIONS REGARDING OCCUPATIONS WITH EXPOSURE TO ANIMAL AND MIXED FIBER DUST.

In the preceding observations and statistical data nine specific occupations with exposure to animal and mixed fiber dusts have been considered in more or less detail. The data for some of the occupations are too meager to warrant final conclusions, but the information here presented is decidedly suggestive of health-injurious conditions in certain of these occupations.

The United States census returns of 1900 give the age distribution of hat and cap makers, silk operatives, woolen mill operatives, carpet factory operatives, and upholsterers, the aggregate number of the males of known ages 15 years of age or over being 114,485. Of this number only 2,805, or 2.5 per cent, had attained to the age of 65 years or over, against a normal expected proportion of 4.6. This fact is decidedly suggestive of conditions more or less unfavorable to health and life in occupations exposing to animal and mixed fiber dusts. The details of the age distribution are given in the following table, by divisional periods of life, together with the corresponding per-

centage distribution of all occupied males, the data for both groups being derived from the United States census of 1900:

NUMBER AND PER CENT OF MALES IN EACH AGE GROUP IN OCCUPATIONS EXPOSED TO ANIMAL AND MIXED FIBER DUSTS, COMPARED WITH THE NUMBER AND PER CENT IN ALL OCCUPATIONS IN THE UNITED STATES, 1900.

[From report of the Bureau of the Census on Occupations, 1900.]

Age.	Males in occupations exposed to animal and mixed fiber dusts.		All occupied males.	
	Number.	Per cent.	Number.	Per cent.
65 to 74 years.....	38,748	33.8	5,933,720	26.0
15 to 24 years.....	31,928	27.9	5,993,847	26.2
25 to 34 years.....	22,096	19.3	4,704,682	20.6
35 to 44 years.....	12,532	10.9	3,250,259	14.2
45 to 54 years.....	6,376	5.6	1,856,181	8.1
55 years or over.....	2,805	2.5	1,063,856	4.7
Total.....	114,485	100.0	22,802,545	100.0

According to this analysis the proportion of males aged 15 to 34 was 61.7 per cent, or nearly two-thirds of the total number in occupations exposed to animal and mixed fiber dusts, against 52.3 per cent for all occupied males. The percentage of occupied males in this group of occupations living at age 35 or over was therefore much less than would be expected on the basis of all occupied males. The actual age distribution would indicate that the conditions of employment in the various occupations considered predispose more or less to a high mortality largely the result of exposure to health-injurious dust.

It is impossible to present a combined summary of the United States census vital statistics of persons employed in the occupations considered in this group. The only occupation for which the facts are given in the census returns is the group entitled hat and cap makers. The vital statistics for this class of employees, when compared with those for occupied males generally, are very suggestive of unfavorable health conditions in occupations exposing to animal and mixed fiber dusts. The death rates of male hat and cap makers are shown to be higher than for all occupied males at all the divisional periods of life for which the facts are obtainable in the census returns. At ages 15 to 24 the general death rate per 1,000 of hat and cap makers was 5.4 against 5.1 expected; at ages 25 to 44 the rate was 13.1 against 8.8 expected; at ages 45 to 64 the rate was 32.9 against 19.9 expected; and at ages 65 or over the death rate of hat and cap makers was 173.1 against 98.4 expected. The death rate per 1,000 employees from consumption was 4.2 for hat and cap makers, according to the census returns, against 2.4 expected; and the death rate from respiratory diseases other than consumption was 2.6 against 2.0 expected.

The details of the mortality of male hat and cap makers by age groups are given in the following table, together with the corresponding death rates for all occupied males, all of the data being derived from the United States census of 1900:

MORTALITY FROM ALL CAUSES AMONG MALE HAT AND CAP MAKERS IN THE REGISTRATION STATES, COMPARED WITH THAT OF ALL OCCUPIED MALES IN THOSE STATES, 1900, BY AGE GROUPS.

[From the report of the Bureau of the Census on Vital Statistics, 1900.]

Age.	Male hat and cap makers.			All occupied males.		
	Number employed. (a)	Number of deaths from all causes.	Rate per 1,000 from all causes.	Number employed.	Number of deaths from all causes.	Rate per 1,000 from all causes.
15 to 24 years.....	3,148	17	5.4	1,259,471	6,486	5.1
25 to 44 years.....	7,028	92	13.1	2,680,241	23,541	8.8
45 to 64 years.....	2,249	74	32.9	1,282,258	25,532	19.9
65 years or over.....	260	45	173.1	283,310	27,888	98.4
Total.....	12,680	228	b 18.0	5,505,281	83,447	c 15.2

* The actual numbers employed in each age group are not given in the census report on vital statistics. The numbers here given are estimated by dividing the number of deaths by the death rate, as shown in the census, and multiplying the quotient by 1,000.

^b From consumption there were 53 deaths, or a rate of 4.2; from other diseases of the respiratory system there were 33 deaths, or a rate of 2.6.

^c The rate of mortality from consumption was 2.4; from other diseases of the respiratory system, 2.0.

The occupation mortality statistics of Rhode Island are available for only two specific occupations in this group, upholsterers and wool sorters. A considerable number of persons are employed in woolen and worsted mills in Rhode Island, but they are returned in the mortality statistics under general terms, such as operatives, spinners, weavers, etc., and the more important of these groups have been already considered in the discussion of cotton mill employees. In Rhode Island during the decade 1897 to 1906, upholsterers and wool sorters combined returned only 62 deaths from all causes. Of this number 11, or 17.7 per cent, were from consumption, against 17.8 expected on the basis of occupied males generally in Rhode Island. The mortality from respiratory diseases other than consumption in the two occupations of this group was 8, or 12.9 per cent, against 12.5 per cent expected. These numbers are too small to form the basis for a final conclusion, but the facts are presented to make the analysis complete.

The English vital statistics for this group of occupations are available for furriers, hatters, silk mill employees, woolen and worsted mill employees, and carpet and rug makers. When the statistics for these occupations are combined they exhibit high death

rates from all causes at ages 20 to 24 and at ages 45 or over. The details are set forth in the following table:

MORTALITY FROM ALL CAUSES, FROM CONSUMPTION, AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM IN OCCUPATIONS EXPOSED TO ANIMAL AND MIXED FIBER DUSTS, COMPARED WITH THAT OF ALL OCCUPIED MALES, IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Age at death.	Death rate per 1,000 due to all causes among—		Death rate per 1,000 due to consumption among—		Death rate per 1,000 due to other diseases of the respiratory system among—	
	All occupied males.	Occupations exposed to animal and mixed fiber dusts.	All occupied males.	Occupations exposed to animal and mixed fiber dusts.	All occupied males.	Occupations exposed to animal and mixed fiber dusts.
15 to 19 years.....	2.44	2.38	0.54	0.61	0.24	0.32
20 to 24 years.....	4.41	5.07	1.55	2.49	.48	.29
25 to 34 years.....	6.01	5.56	2.03	2.20	.77	.72
35 to 44 years.....	10.22	9.48	2.74	2.68	1.66	1.45
45 to 54 years.....	17.73	17.78	3.04	3.24	3.32	3.13
55 to 64 years.....	31.01	37.33	2.16	2.65	6.54	7.02
65 years or over....	88.39	120.44	1.11	1.81	17.77	25.12

The table shows that the mortality from consumption among men in occupations with exposure to animal and mixed fiber dusts was excessive at all ages except 35 to 44, when the consumption mortality rate was 2.68 for the occupations of this group, as against 2.74 for all occupied males. The excess in the mortality from consumption was highest at ages 20 to 24, when the rate was 2.49 for the occupations of this group against 1.55 for all occupied males. The mortality from respiratory diseases other than consumption was somewhat fluctuating when compared with the corresponding rates for all occupied males; nevertheless the differences were slight, except at ages 65 or over, when the mortality for the combined occupations of this group was 25.12 per 1,000 against 17.77 for all occupied males.

The industrial insurance mortality statistics are available for seven occupations included in this group, returning in the aggregate 1,915 deaths of males from all causes at ages 15 or over. Of this number 615, or 32.1 per cent, were from consumption. The deaths from respiratory diseases other than consumption numbered 242, or 12.7 per cent. The expected consumption mortality on the basis of the mortality of males in the registration area of the United States for the seven-year period 1900 to 1906 was 14.8 and the expected mortality from other respiratory diseases was 11.7. When the mortality from consumption and from other respiratory diseases is combined the proportionate percentage of deaths of males in occupations with exposure to animal and mixed fiber dusts is found to be 44.8 against 26.5 expected. The following table gives the summary statistics in

detail for the seven occupations in this group for which the industrial insurance mortality experience is available:

PROPORTIONATE MORTALITY FROM CONSUMPTION IN OCCUPATIONS EXPOSED TO ANIMAL AND MIXED FIBER DUSTS, 1897 TO 1906, COMPARED WITH THAT OF ALL MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[Figures for deaths in occupations exposed to animal and mixed fiber dusts are from experience of an industrial insurance company; figures for males in registration area are computed from mortality statistics of the United States census.]

Age at death.	Deaths in occupations exposed to animal and mixed fiber dusts, 1897 to 1906, due to—		Percent of deaths due to consumption among—	
	All causes.	Consumption.	Occupations exposed to animal and mixed fiber dusts.	Males in registration area, 1900 to 1906.
15 to 24 years.....	248	106	42.7	27.8
25 to 34 years.....	364	194	53.3	31.3
35 to 44 years.....	391	189	48.3	23.6
45 to 54 years.....	292	74	25.3	15.0
55 to 64 years.....	324	39	12.0	8.1
65 years or over.....	296	13	4.4	2.7
Total.....	1,915	a 615	a 32.1	b 14.8

* There were also 242 deaths from other diseases of the respiratory system, or 12.7 per cent of the deaths from all causes.

^b The per cent of deaths from other diseases of the respiratory system in the registration area was 11.7.

It is evident from the foregoing observations and statistical data relating to typical employments with exposure to animal and mixed fiber dusts that the effects of such exposure are injurious to health, and particularly so in early life. The summary table shows that the mortality from consumption of employees in this group of occupations is from 50 to 100 per cent higher at all ages than would normally be expected.

GENERAL SUMMARY OF RESULTS.

A general summary of the preceding observations and statistical data does not seem necessary for the present purpose, which is to emphasize the degree of consumption frequency in different occupations rather than the differential degree of lung injury resulting from exposure to particular kinds of dust. In an address on "Tuberculosis as an industrial disease," read before the Sixth International Congress on Tuberculosis, by the writer, the latter aspect of the problem was enlarged upon to a certain extent. The discussion was limited, however, to industrial insurance mortality experience, at the same time including occupations exposing also to general organic and municipal or street dust, which it was not feasible to include in the pres-

ent discussion. From the address referred to the following extract is made:

When all the occupations for which the information is available, inclusive of many other than the thirty employments considered in this discussion, are combined, the proportionate mortality from consumption is 28.0 per cent of the mortality from all causes at ages 15 and over. In the group of occupations exposing chiefly to the inhalation of metallic dust the proportionate mortality from consumption was 37.4 per cent; in occupations exposing to animal and mixed fiber dust, 32.3 per cent; in occupations exposing to mineral dust, 28.6 per cent; in occupations exposing to municipal or street dust, 27.5 per cent; in occupations exposing to vegetable fiber dust, 27.4 per cent; and in occupations exposing to organic dust, 23.7 per cent. These percentages of consumption frequency are derived from an analysis of 22,987 deaths from all causes in the occupations included in the investigation.

The analysis may be extended to divisional periods of life, to emphasize the more immediate effects of health-injurious dust inhalation, and beginning with ages 15 to 24 the proportionate mortality from consumption was highest in occupations exposing to the inhalation of animal and mixed fiber dust, or 49.6 per cent of the mortality from all causes. In occupations exposing to metallic dust it was 47.1 per cent; to organic dust, 40.9 per cent; to municipal or street dust, 39.8 per cent; to vegetable fiber dust, 39.1 per cent; and to mineral dust, 31.7 per cent.

At ages 25 to 34 the proportionate mortality from consumption was highest in occupations exposing to the inhalation of metallic dust, or 56.7 per cent of the deaths from all causes. In occupations exposing to the inhalation of vegetable fiber dust it was 53.3 per cent; of organic dust, 50.1 per cent; of animal and mixed fiber dust, 49.7 per cent; of mineral dust, 47.6 per cent, and of municipal or street dust, 43.5 per cent.

At ages 35 to 44 the proportionate mortality from consumption was highest in occupations exposing to the inhalation of metallic dust, or 43.0 per cent of the deaths from all causes. In occupations exposing to the inhalation of animal and mixed fiber dust it was 40.4 per cent; of vegetable fiber dust, 39.8 per cent; of mineral dust, 36.3 per cent; of organic dust, 36.2 per cent, and of municipal or street dust, 34.6 per cent.

At ages 45 to 54 the proportionate mortality from consumption was highest in occupations exposing to the inhalation of mineral dust, or 27.9 per cent of the deaths from all causes. In occupations exposing to the inhalation of metallic dust it was 23.6 per cent; of animal and mixed fiber dust, 23.2 per cent; of vegetable fiber dust 22.9 per cent; of organic dust, 21.9 per cent, and of municipal or street dust, 14.2 per cent.

At ages 55 to 64 the proportionate mortality from consumption was highest in occupations exposing to the inhalation of mineral dust, or 16.2 per cent of the deaths from all causes. In occupations exposing to the inhalation of vegetable fiber dust it was 11.6 per cent; of metallic dust, 11.5 per cent; of organic dust, 11.4 per cent; of animal and mixed fiber dust, 11.2 per cent, and of municipal or street dust, 10.8 per cent.

At ages 65 and over the proportionate mortality from consumption was highest in occupations exposing to the inhalation of mineral dust, or 6.8 per cent of the deaths from all causes. In occupations exposing to the inhalation of organic dust it was 4.6 per cent; of metallic dust, 3.8 per cent; of animal and mixed fiber dust, 3.7 per cent; of vegetable fiber dust, 3.7 per cent, and of municipal or street dust, 2.9 per cent.

From the same address is quoted the following concluding portion summarizing the social and economic aspects of the tuberculosis problem in its relation to American industry:

The problem of occupation mortality and tuberculosis, with special reference to that period of life at which the degree of consumption frequency is most excessive, may now be briefly restated as follows: The census mortality rate of 1900 for men in gainful occupations was 15.0 per 1,000 and the consumption death rate 2.4 or 16.0 per cent of the mortality from all causes. Among men in manufacturing and mechanical industries the general death rate was 13.8 per 1,000, and the consumption death rate 2.6, or 18.8 per cent of the mortality from all causes. Among men in agricultural, transportation, and other outdoor occupations (including, however, a considerable proportion of persons of advanced years) the general death rate was 15.8 per 1,000, and the consumption death rate 1.5, or 9.5 per cent of the mortality from all causes. Contrasting the consumption death rates in these two groups of employments, the enormous waste of human life in industry becomes readily apparent. If the consumption mortality in dusty trades could be reduced to the corresponding proportion for men in outdoor occupations, a very large number of lives would be saved and continue for many years, which are now, to a large extent, needlessly wasted. The problem may be emphasized by a few specific illustrations of occupations exceptionally exposed to the risk of dust inhalation. The census mortality rate for marble and stone cutters was 14.9 per 1,000, and the consumption death rate 5.4, or 36.2 per cent of the mortality from all causes. The general death rate of cigar makers was 18.7 per 1,000, and the consumption death rate 4.8, or 27.7 per cent of the deaths from all causes. The general death rate of printers and compositors was 12.1, and the consumption death rate 4.4, or 36.4 per cent of the mortality from all causes, while for the strictly outdoor labor class, that is, farmers, planters, and farm laborers, the general death rate was 17.6 per 1,000, but the consumption death rate was only 1.1, or 6.25 per cent of the mortality from all causes. Granting that these rates are not entirely trustworthy, and that the census method of mortality investigation at that time was not as technically perfect as it is at present, and granting further that all occupation mortality data have their inherent defects, when derived from general methods of population enumeration and the methods in vogue in the registration of deaths, there is not the slightest reason to question the approximate accuracy of the foregoing rates and conclusions, which are in strict conformity to the other facts previously presented.

Estimating the wage-earning population (males and females) of the United States at ages 15 or over for 1908 at 31,768,943, and assuming a consumption death rate among this element of the population

of 2.2 per 1,000,^(a) the number of deaths from consumption among wage-earners during 1908 would be approximately 69,892. Since it is possible by intelligent factory inspection and control, and with special regard to ventilation (that is, the removal of injurious dust particles at the point of their origin) to almost entirely eliminate the conditions injurious to health and life in factories and workshops and industry generally, it is not going too far to advance it as a fundamental principle of sanitary legislation that the consumption death rate among wage-earners can be reduced, by intelligent methods, to a ratio as low as 1.5 per 1,000.^(b) On the above basis such a reduction would result in an annual saving of approximately 22,238 human lives. Since the average age at death of persons 15 years of age or over dying from consumption in the registration area of the United States is 37.4 years and probably not much more than 32 years for persons employed in strictly dusty trades, and since the normal average age at death in the mortality from all causes for persons 15 years of age or over is 52.8 years, there would be an average expected gain of at least 15.4 years of life for every death from consumption avoided by rational conditions of industrial life. Such a gain would represent a total of 342,465 years of additional lifetime, and by just so much the industrial efficiency of the American nation would be increased. If we place the economic value or net result of a year's lifetime at only \$200, the total average economic gain to the nation would be \$3,080 for every avoidable death of a wage-earner from consumption, representing the enormous total of \$68,493,000 as the aggregate annual financial value in the probable saving in years of adult human life. With such results clearly within the range of practical attainment, nothing within reason should be left undone as a national,

^a This rate is based upon the number of gainfully employed persons (male and female) 10 years of age or over in the registration States in 1900 and the number of deaths among that element of the population during the census year. Unfortunately it has not been possible to calculate the corresponding consumption death rate for persons gainfully employed of ages 15 or over, as the necessary data were not included in the census reports. The consumption death rate of 2.2, however, would be raised rather than lowered if it were possible to get at the facts, because the consumption death rate is lower at ages 10 to 14 than at ages 15 or over. The calculations based upon the consumption death rate of 2.2 per 1,000 of the gainfully employed are therefore conservative, being in all probability rather an under than an over statement of the facts.

^b See article on "Mortality from consumption in small cities," by Frederick S. Crum, in *Quarterly Publications of the American Statistical Association* for December, 1907, pp. 448-479. In this article, which is based on the mortality statistics of the United States census, it is shown that the average annual death rate from consumption in 209 small cities in the United States for the years 1901 to 1905 was 1.58 per 1,000, and in 30 of these cities the rate was below 1.0 per 1,000. If nine cities with over 15 per cent of Negro population are discarded it is shown that the consumption mortality for the remaining 200 small cities was 1.51 per 1,000.

state, and individual, or social duty to prevent that needless, but now enormous, loss of human life from consumption due to unfavorable conditions in American industry.

THE PROBLEM OF VENTILATION AND DUST REMOVAL IN INDUSTRY.

The statistical evidence presented in the preceding discussion of dusty trades is entirely conclusive that an excessive degree of consumption frequency in any particular occupation depends primarily or largely on the kind and quantity of dust inhaled by the workmen. All who have written upon the subject with authority emphasize the importance of adequate ventilation and dust reduction or removal by artificial means and methods, but the most conclusive evidence has been presented in two reports of an English departmental committee appointed to inquire into the ventilation of factories and workshops, the first being published in 1902, the second in 1907. The reports warrant the conclusion that effective ventilation of factories and workshops and the artificial removal of dust at the point of origin is entirely practicable and possible at moderate expense. Since these reports are not generally accessible, they are here quoted from at some length. The committee in its first report, in part, said as follows:

It is evident that the air breathed by the employees in a factory or workshop can be kept pure in two ways: (1) By constantly renewing from outside the whole of the air of the room in which work is carried on; (2) by removing impurities locally, or otherwise preventing them from ever mixing with the air breathed. The former process may be distinguished as general and the latter as local ventilation. As a general rule, dust and fumes can best be dealt with by local ventilation or by other means, whereas impurities due to the presence of employees and of lights burning must be got rid of by general ventilation.

The first report was limited to considerations of general ventilation, while the second considered at length the problem of local ventilation and other means of preventing injury to health by dust and fumes. The committee called attention to the agreement of authorities that health depends to a large extent on a constant and abundant supply of air which is uncontaminated by any substances which would cause discomfort or which contain poisonous, infective, or otherwise harmful material. By section 7 of the Factory and Workshop Act, 1901, it was provided that "in every room in any factory or workshop sufficient means of ventilation shall be maintained," and, further, that "the secretary of state may, by special order, prescribe a standard of sufficient ventilation for any class of factories or workshops, and that standard shall be observed in all factories and workshops of that class." A large number of orders have been issued

under the provisions of this act, which unquestionably have resulted in a very material improvement in the conditions affecting health and industry.

Since the present discussion is limited to dusty trades, the observations and recommendations of the committee with reference to the purity of the atmosphere in factories and workshops otherwise than by the impairment of such purity through dust-generating processes as cause or effect inseparable from the conditions under which work is carried on, are passed over. One very suggestive paragraph from the report with reference to the practical difficulties confronting efforts at adequate ventilation in the case of sedentary occupations is quoted, but the objection on the part of employees to proper ventilation depends sometimes on the absence of proper warming arrangements during cold weather. The committee points out that—

This often leads to further vitiation of the air through the lighting of gas-burners for heating purposes during the day, a wasteful and objectionable plan. The establishment of a legal maximum limit of carbonic acid would probably conduce to the provision and use of proper heating appliances in such cases. We are of opinion that heating arrangements capable of maintaining in case of necessity a temperature at least 25° F. above that of the outside air, in the absence of lights and employees, but along with adequate ventilation, should be provided in all factories and workshops where the occupation is sedentary or involves little muscular exertion, and should be regularly used in the colder weather. In such occupations the temperature should not be less than about 60° F., particularly where the work involves delicate manipulations with the hands.

In the evidence appended to the first report the committee included the results of a scientific examination of the problem of ventilation in clothing factories, tailoring workshops, dressmaking and millinery workshops, boot and shoe workshops, laundries, cabinet and upholstery works, in establishments engaged in the making of bread, confectionery, and articles of food, letterpress printing, book-binding, the manufacture of stationery and cardboard boxes, engineering and metal trades, file cutting, and the manufacture of the different varieties of textiles. The evidence collected was of a highly scientific and conclusive character, and the methods of inquiry employed are suggestive of the corresponding methods required for the proper determination of the circumstances injurious to health and life in all dusty trades.

In the second report the committee dealt with the application of fans to factory ventilation in connection, more particularly, with the removal of dust, steam, fumes, and other impurities associated with other manufacturing processes, and also with the very important question of the use of respirators by workmen engaged in occupations which can not be successfully subjected to artificial methods of ven-

filtration and dust removal. The committee discussed at considerable length the highly technical aspects of ventilating engineering, including the selection of fans and the relative utility of low and high pressure fans according to particular circumstances inseparable from the conditions under which given industries are carried on. It considered the volume of air required for different purposes of ventilation and the arrangement of inlets and outlets, fully illustrating its observations by a large number of charts and diagrams which clearly emphasized the strictly scientific manner in which the investigations of the committee were made to secure the practical solution of the problems which confronted them. From the remarks regarding general ventilation some of the more important and suggestive extracts are here quoted:

Certain impurities can hardly be prevented from becoming generally distributed in the air of a room, and can thus only be dealt with by general ventilation of the room. In most cases this is true of the products of respiration and of combustion of gas, the water evaporated in wet processes, and the heat given off from moving or artificially heated machinery, and in some cases of the production of dust. In removing these impurities, or sources of inconvenience, the supply of air must be sufficient for the particular purpose in view. If, for instance, heat or dust has to be removed, the ventilation must be sufficient to effect this removal, and not merely to dilute the products of respiration.

The quantity of air required to remove excessive heat and moisture can not well be calculated in the same way, as the loss of heat through walls and roof is usually not known, and in any case varies with the weather. The air supply must therefore be regulated with the help of thermometers. Air in which the reading by the wet-bulb thermometer exceeds about 70° begins to cause serious inconvenience with ordinary clothing, and this limit ought not to be exceeded in factories or workshops except under exceptional conditions.

Experiments show that if the wet-bulb reading rises beyond about 88° in fairly still air, the body temperature can no longer be prevented from rising seriously even in persons stripped to the waist and doing no work; and with muscular work under the same conditions the body temperature may rise rapidly at a wet-bulb temperature of 80° . With ordinary clothing this effect is considerably greater. At the upper limits it is not the temperature of the air, but that of the wet-bulb thermometer, that matters; and, provided that the air is so dry that the wet-bulb temperature does not exceed the limits specified, air temperatures up to 130° or more can be tolerated without rise of bodily temperature. Much higher wet-bulb temperatures can of course be borne for short periods, but the body temperature soon rises seriously.

In removing steam from rooms it must be borne in mind that cold air is apt to cause condensation of aqueous vapor. Thus if air saturated with moisture at 80° is mixed with even ten times its volume of air from outside at 40° condensation will nevertheless usually occur, and will always do so, whatever the dilution, if the incoming air is saturated with moisture at the outside temperature. If, however, the incoming air be warmed to a moderate extent as it enter

this condensation will be prevented, and the ventilation will serve the double object of cooling the room and preventing condensation. If it is only necessary to prevent condensation of vapor and not to remove heat, the object can often be best attained by providing not extra ventilation, but heating arrangements. In the case of dye works, etc., where the building is often filled with steam from the vats, experience shows that the atmosphere is best cleared and condensation avoided by blowing in air heated by passing through a coil or other form of radiator.

As regards removal of dust, the standard of purity aimed at should always be sufficient to prevent injury to health, and should also be such as to prevent inconvenience and enable those employed to be clean when they leave work, after washing, if necessary. Dust from the disintegration of hard stone, steel grinding, etc., is extremely deleterious, and the same may be said of dust containing any poisonous constituent, such as lead. In such cases the dust should, by special means, apart from general ventilation, be entirely prevented from mixing with the general atmosphere of a room; and the same remark applies to all poisonous gases and fumes.

The effect of ventilation on the temperature of a working room during cold weather needs careful regulation. For sedentary work and fine manipulations a temperature of not less than about 60° is required. With lower temperatures the working powers of those present become impaired; and the effects of the low temperature are much increased by drafts. On the other hand, if the work implies active exertion, lower temperatures are permissible; and some kinds of work associated with dust, fumes, etc., can best be performed in sheds open to the air. In general, the more nearly open-air conditions can be attained in any class of work, the better; and, whenever possible, windows should be thrown widely open in summer weather.

Commenting upon the dust problem in particular and its relation to health, it is pointed out in a footnote to the report that it is sometimes difficult to say whether the inhalation of a given variety of dust is definitely injurious. The committee, therefore, held that—

Dust from any hard stone (such as flint, granite, sandstone, etc.) is undoubtedly very injurious to the lungs, producing a marked predisposition to phthisis. On the other hand, coal dust, cement dust, and probably many other varieties of organic and inorganic dust have by no means the same serious effects. During our inquiry many experiments have been made by Professor Ritchie with a view to finding a means of experimentally distinguishing the more injurious from less injurious dusts, but unfortunately no satisfactory results have as yet been reached.

In the discussion of the problem of local ventilation, the committee came to the conclusion that—

Dust, fumes, steam, and other impurities unavoidably given off into the air should, wherever possible, be removed locally, and thus prevented from mixing with the general air of the room. Ventilation with this object in view may be distinguished as "local ventilation." Local ventilation is best carried on by means of exhaust fans, which

may be of the propeller type if large ducts and low velocities of air will suffice. In many cases, however, centrifugal fans are essential, and usually they are preferable on account of the liability of propeller fans to be interfered with by wind, etc. Fans used for the removal of corrosive fumes should be efficiently protected from their action. The question of possible injury to bearings or other parts by gritty material, and of possible blockage by fibrous material, should also be borne in mind in selecting a fan.

If dust or fumes are allowed to escape in any quantity into the general atmosphere of a room enormous volumes of air are required to remove or dilute them sufficiently. Great discomfort from cold or else great expense in heating are thus entailed, so that it is in every way preferable to remove them by local ventilation. The nearer to their points of production they can be removed the less will be the quantity of air required, and consequently the less will be the discomfort and expense which they cause.

Dusty machines which can not be completely boxed in should, if possible, be provided with an exhaust sufficiently powerful to draw the dust from exposed parts inward through the machine to an exhaust opening. Wheels used in dry grinding, polishing, etc., should, wherever possible, be inclosed and provided with an exhaust from a centrifugal fan capable of giving a current at high velocity around the exposed part of the wheel. The part of the wheel left open should be as small as is consistent with efficient working.

Dusty operations, such as the transference and packing of dry and dusty material, should, if possible, be carried out by mechanical arrangements boxed in so as to prevent the escape of dust, and combined, if necessary, with local exhaust ventilation. This is extremely important where the material contains some poisonous or harmful substance, such as lead, bichromate of potash, powdered flint, etc. Where such arrangements are not possible thoroughly efficient respirators should be used in the case of dangerous material.

For manipulations by hand in which dust, poisonous spray, or objectionable fumes are given off, working places provided each with a separate exhaust opening can often be arranged. The table at which the work is done should have an exhaust opening cut through it or placed behind it and so arranged that the dust arising from the work is drawn away from the mouth of the person working and into a duct placed beneath or behind the table. The provision of a hood, which may be made of glass, so as not to obstruct the light, greatly helps the action of the exhaust, which must be sufficient to actually prevent the dust from reaching the mouth of the worker. Where the dust requires to be collected a settling chamber under the exhaust opening can sometimes be provided.

Of the important and suggestive remarks of the committee regarding matters of technical detail in the installation of local ventilation, mention is made only of those regarding operations in wool sorting and rag sorting. In these occupations the committee thought the best way to manipulate the dusty material was on a flat-wire grating through which air is exhausted from below. It was held that in such a case the rate of flow at every part of the grating must be sufficient

to draw the dust downward, and that the whole arrangement, including inlet ventilation to the room, must be such that this purpose is effected under all conditions, for it was explained that—

It often occurs that a large dusty machine can not be sufficiently inclosed for the effective application of direct-exhaust ventilation, or that dusty work by hand can not be confined to the immediate neighborhood of an exhaust opening. In these cases air inlets and outlets should be so arranged as to carry off the dust in such a direction as to contaminate as little as possible the air in positions where persons have to be present. The most generally available plan is to have the exhaust openings in the floor around each dusty machine, or as close as possible to whatever the source of the dust may be, and to allow air to enter in an abundant stream from the roof above, warmed if necessary to prevent impact of cold draft on workers. As dust tends naturally to fall to the floor, it is best to remove it downward unless a rapid air current, sufficient to draw it in any direction, is available. If the machine is placed near a wall and no person is required to work between the wall and the machine, the dust may be advantageously exhausted through a fan placed low down in the wall and securely guarded.

In the case of machines which can not be boxed in it will often be found that the dust is produced at some particular point where it is capable of being locally removed. Thus, for illustration, the committee stated that if the dust is produced as the material is passed through rollers, as in the operation performed by a machine known as a spread board in flax spinning, exhaust ventilation applied close to each roller will remove it completely with a minimum of trouble and expense. In continuation of the discussion the committee pointed out that—

With regard to all exhaust openings for extraction of dust, etc., it must be clearly borne in mind that in whatever direction the opening may point the air feed is from all round; hence the radius within which a perceptible draft is produced toward the opening is extremely limited. The air current toward an exhaust opening can not be directed except by cumbrous air guides, whereas the current from an inlet can be directed just like the water issuing from a fireman's hose.

It is held that hitherto hardly any advantage has been taken of the latter fact in connection with the removal of dust and fumes, but the committee was confident that many difficult cases can be successfully dealt with by utilizing the momentum of air issuing from an inlet opening, and if compressed air in small tubes is available, fine jets of it directed across any source of dust and fumes toward a large outlet opening would be decidedly effective. It, therefore, suggested as a plan to test the efficiency of any arrangement for the local removal of dust or fumes the simple method of a piece of smoking brown paper or other material held at the place where the dust or fumes are given off.

In the case of dust which may not be discharged into the open air on account of the nuisance or damage which it would cause to the surrounding locality and which must, therefore, be separated from the discharged air, the "Cyclone separator" is often extremely effective, and this separator the committee describes by illustrations in the appendix. The invention requires little space and is easily erected at a point either near to or remote from the fan. It was stated, however, that—

The dust may also be separated in a settling chamber, taking the form of a room or an outhouse set apart for the purpose. In this case the addition of steam from a jet will often greatly facilitate the precipitation of light dust. Heavier metallic particles can be blown into a tank of water. A common defect in settling chambers is the neglect to provide a sufficient outlet for the spent air, by which means the whole arrangement for exhausting and settling the dust is rendered ineffective.

As it is evident that the circumstances under which fan ventilation needs to be applied vary greatly in different rooms and different processes of manufacture, we would, in conclusion, take this opportunity of pointing out the necessity of carefully considering the special conditions requiring to be dealt with in each individual case, and the desirability of obtaining competent skilled advice in all cases of doubt, or of employing, in the installation of fan ventilation, only such firms as are known to have at their disposal the requisite knowledge and experience.

Finally, in concluding its extremely valuable report, the committee considered the use of respirators, as follows:

The use of respirators capable of arresting dust is often recommended in connection with factory work as a substitute for efficient removal of dust. Experience has, however, shown that it is extremely difficult to enforce the use of respirators, as they are all more or less uncomfortable and inconvenient, besides being unsightly. It is also very difficult to keep respirators in working order and closely applied to the face. Often enough it is found that most of the air breathed by a person wearing a respirator leaks in between the face and the respirator, and is consequently unfiltered. This is particularly apt to happen after a respirator has been worn sufficiently long for the filtering material to become damp and clogged with moisture. Except, therefore, where dust is definitely dangerous and can not be dealt with by exhaustion, or by using wet processes, or in other ways, we are unable to recommend the use of respirators as an alternative to keeping the air clear of dust.

For the exceptional cases in which it is necessary for men to work in air containing poisonous or otherwise dangerous dust, the mouth and nose may be kept covered by a sheet of fresh cotton wool kept closely applied all round by suitable fastenings passing round the neck. This forms a reliable and efficient respirator, and is commonly used by men who have to perform such work as the removal of arsenic from arsenic flues, or of white lead from lead chambers.

For cases where work has to be done in an atmosphere containing poisonous gases or fumes, a smoke helmet, with air supplied from

outside through a pipe, may be used. The air supply should be not less than 2 cubic feet per minute and may be provided either from a bellows worked by hand or from a mechanically driven air pump or high-pressure centrifugal fan. A self-contained breathing apparatus, such as is used in mines, is less convenient for factory work and more expensive.

The importance and great practical value of preventive measures in efforts to reduce the health-injurious circumstances of different trades has made it seem advisable to make rather extended abstracts from the admirable and thoroughly scientific report of the committee on ventilation of factories and workshops. The conclusions and recommendations of the committee were, however, anticipated by Sir James Crichton-Browne, who, in his address on *The Dust Problem*, held that—

In dealing with industrial dust generally the one universal and potent remedy is, of course, ventilation. In contending with certain special kinds of dust special appliances and arrangements are necessary; but for dust, as a whole, our aim should be to intercept and remove it at its point of origin and to insure a bounteous supply of fresh air, and many contrivances for this purpose, more or less efficient, are already in use.

After referring to the then pending report of the departmental committee on the ventilation of factories and workshops, Sir Crichton-Browne summed up his own conclusions in the statement that—

What is wanted is a code of precise instructions to be placed in the hands of a manufacturer who is required to provide fans, indicating the number, pattern, size, speed, and position of the fans which will most effectively and economically secure the desired result, together with directions as to the number and position of openings into the outer air, and also a judgment on the physiological effects of existing respirators and proposals for the construction of one more convenient and trustworthy and less cumbrous than any yet known.

English opinion is decidedly in favor of a clear statement of the scientific principles that should underlie all methods of factory ventilation and dust removal, but so framed in clear and specific language for the guidance of inspectors that the legal requirements can be carried into effect with the least amount of interference with the industrial methods and conditions of the present day. Sir Crichton-Browne also expressed the hope that the report of the departmental committee would offer suggestions to architects for the construction of factories, since many, if not most of the factories now existing, are so built as to render almost impossible a proper system of ventilation, which should have been a primary consideration in their erection. He was confident in his prediction that rational factory legislation, with special reference to ventilation and dust removal,

would greatly tend to reduce the death rate among many different classes of operatives, improve their health, and augment their productive power. He quoted the evidence of factory inspectors and managers who had testified to the improvement in health and the increased vigor of the workers subsequent to the improved methods of ventilation. One leading manufacturer, replying to inquiries of the inspector of cotton-cloth factories, expressed the opinion that "the effect of improved ventilation on the health of the workers has been good. We have had less staying away through sickness than before we had artificial humidity and ventilation in our sheds. The earnings have been more regular, but we do not find that they have increased as much as we expected; but the effect of the change has been advantageous to the manufacturer, the quality of the work being better and more perfect."

Thus upon both humanitarian and economic grounds the effect of scientific ventilation of factories and workshops, and in particular the effective removal of industrial dust, combine to emphasize the need of more or less radical changes in the conditions as they exist at the present time.

The entire subject of the removal of dust and fumes in factories, with special reference to the health-injurious circumstances of dusty trades, has also been presented in an admirable summary account by J. S. Haldane, M. D., F. R. S., in one of the Shaw lectures on "Industrial hygiene," before the Royal Society of Arts, delivered February 28, 1908. Doctor Haldane was one of the most important members of the departmental committee on the ventilation of factories and workshops, and his views, in part, have already been included in the extended account of the report and recommendations of the committee. The following remarks restating his conclusions as to the causes responsible for more or less health-injurious conditions among factory workers and his recommendations as to the methods most likely to bring about a material improvement in those conditions are important and are quoted from his lecture:

Whether or not any variety of dust is known to cause dangerous effects when habitually inhaled, I think that every kind of dust produced in manufacturing process ought, as far as practicable, to be prevented or removed from the atmosphere in which the work people are present. The reason for this is not only that dusty air is, at the best, unpleasant to breathe, but that when dust is present the clothes, skin, and hair become dirty, untidy, and uncomfortable. This inevitably tends to lower the social status and self-respect of work people if, at any rate, they have to go back to their homes in the same untidy condition. Where dust and dirt can not be avoided the provision of overalls, or of means of washing and changing clothes on leaving work, is extremely desirable.

Of dusts which are definitely harmful, one very important class is that from the disintegration of hard stone or other material. As instances of this we may take the dust from siliceous or other hard stone, which has to be disintegrated in the mining of gold, tin, lead, and other metals, and the dressing of hard stone, or the ground flint dust used in pottery work, or the dust from dry grinding in the metal trades, or the steel dust produced in file cutting and other work.

In many cases the best way of dealing with dust is to prevent its formation altogether. This can be effected by substituting wet for dry processes, and, fortunately, much of the most dangerous dust can be dealt with in this way—in particular the dust from disintegration of hard stone or steel. Thus the use of a jet of water prevents dust formation in rock-drill and other work in tin and ganister mining, special rules to the effect being now in force. It is to be hoped that in all cases where dust from disintegration of hard stone, fire-clay bricks, and similar material is apt to be inhaled, wet methods will also be adopted where possible. The substitution of wet for dry grinding and for dressing of grindstones is another important step in the right direction, and I have little doubt that in many other dusty processes it would be practicable to use wet methods, though, unfortunately, wet processes are quite out of the question in very many cases.

When dust formation can not be avoided, its escape can sometimes be prevented by entirely boxing in the dusty process. Where the dust is itself the product of the process, as in the grinding or breaking up of material, efficient boxing in is an advantage to the process itself as well as to the persons employed in it.

In most cases it is unfortunately not possible to either prevent the formation of dust or to box in the dusty process completely, and the only method available is to draw the dust by means of an air current. There are certain general principles applicable to the removal of dust in this way. In the first place, the dust ought to be removed at, or as near as possible to, the point of origin. The advantages of this are evident, for by this means the dust is prevented from getting into the general atmosphere of the room and being inhaled by those present, as well as settling everywhere. A far smaller volume of air is also sufficient to remove the dust. This is important, not only from the point of view of expense, but because drafts and cold are also prevented. When dust is permitted to get into the general atmosphere of a factory, enormous volumes of air are required to carry it away, which means that equal volumes have to come in from outside, so that warming or prevention of drafts may be quite impracticable. As a good example of the advantage of removing dust locally I may instance a device for removing the dust produced by rollers in a process preparatory to flax-spinning. The dust produced at the rollers is sucked in by small exhaust openings applied close to the rollers. A quite small air current applied in this way is far more effective than one hundred times as great an air current a few feet off would be.

A second general principle is that the air current from the source of dust to the exhaust opening should, as far as possible, envelop the source of dust, and be of sufficient velocity to carry the dust with it in spite of the ordinary slight drafts existing in the room, or produced by the dusty machine. It is unfortunate that in whatever

direction an exhaust opening may point, the air entering it is sucked in from all sides. Hence the linear velocity of the draft toward the opening diminishes very rapidly with increasing distance, and at a distance of 2 or 3 feet an exhaust opening, unless very large, will fail to carry off dust efficiently, particularly from a machine which itself causes drafts.

The lecture by Doctor Haldane was fully illustrated to bring its more technical portion within the ready understanding of the layman, and the address should be consulted by all who desire to become thoroughly informed as to the most advanced and qualified opinion regarding the effective and practical removal of dust and fumes in factories and workshops. The remarks and conclusions are decidedly practical, and applicable to American establishments, in which thus far the problem of scientific ventilation and effective dust removal has been almost entirely neglected.

APPENDIX.

TABLE I.—NUMBER OF MALES EMPLOYED IN VARIOUS OCCUPATIONS IN THE UNITED STATES, 1900, BY AGE GROUPS.

[Computed from report of the Bureau of the Census on Occupations, 1900.]

Occupation.	Number of male employees in each age group.						
	15 years or over.	15 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and cutlery makers.....	26,997	7,258	8,335	5,811	3,261	1,666	666
Gold and silver workers.....	19,474	6,493	5,443	3,913	2,609	1,139	477
Brass workers.....	25,557	8,016	8,581	5,188	2,428	1,034	360
Printers, lithographers, and pressmen.....	136,923	50,669	44,191	24,210	10,963	5,069	1,801
Engravers.....	10,628	3,227	3,496	2,124	1,020	509	250
Total—Occupations with exposure to metallic dust.....	219,579	75,663	69,998	41,246	19,711	9,467	3,554
Marble and stone cutters.....	54,039	8,579	16,566	14,555	9,075	3,766	1,468
Glass workers.....	44,396	17,882	13,314	7,025	3,538	1,345	352
Potters.....	12,856	4,536	3,825	2,545	1,259	483	206
Plasterers.....	35,506	3,971	9,205	8,839	7,791	3,801	1,999
Paper hangers.....	21,607	5,486	7,077	4,689	2,821	1,122	412
Total—Occupations with exposure to mineral dust.....	168,404	40,454	49,987	38,253	24,784	10,517	4,409
Cotton-mill operatives.....	110,953	53,622	28,129	16,031	8,887	3,346	938
Hosiery and knitting mill operatives.....	11,372	6,350	2,699	1,355	607	250	111
Paper and pulp makers.....	26,485	8,747	8,445	5,154	2,764	1,042	333
Cabinetmakers.....	35,435	4,490	7,940	9,044	6,857	4,144	2,960
Total—Occupations with exposure to vegetable fiber dust.....	184,245	73,209	47,213	31,584	19,115	8,782	4,342
Hat and cap makers.....	14,048	4,110	4,655	3,415	1,702	768	298
Silk-mill operatives.....	20,301	9,022	5,301	3,380	1,563	785	250
Woolen-mill operatives.....	40,768	15,042	10,956	7,446	4,340	2,189	795
Carpet-factory operatives.....	10,034	3,180	2,654	1,842	1,182	691	485
Upholsterers.....	28,434	7,394	8,362	6,013	3,745	1,943	977
Total—Occupations with exposure to animal and mixed fiber dust.....	114,485	38,748	31,928	22,096	12,532	6,376	2,805
All occupied males—Continental United States.....	22,802,545	5,933,720	5,933,847	4,704,682	3,250,059	1,856,181	1,063,856

TABLE III.—PER CENT OF MALES EMPLOYED IN EACH AGE GROUP IN VARIOUS OCCUPATIONS IN THE UNITED STATES, 1900.

[Computed from report of the Bureau of the Census on Occupations, 1900.]

Occupation.	Per cent of male employees in each age group.						
	15 years or over.	15 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and cutlery makers.....	100.0	26.9	30.9	21.5	12.1	6.2	2.4
Gold and silver workers.....	100.0	38.3	28.0	20.1	10.3	5.8	2.5
Brass workers.....	100.0	31.4	33.4	20.3	9.5	4.0	1.4
Printers, lithographers, and pressmen.....	100.0	37.0	32.3	17.7	8.0	3.7	1.3
Engravers.....	100.0	30.4	32.9	20.0	9.6	4.8	2.3
Total—Occupations with exposure to metallic dust.....	100.0	34.4	31.9	18.8	9.0	4.3	1.6
Marble and stone cutters.....	100.0	15.9	36.6	26.9	16.8	7.0	2.8
Glass workers.....	100.0	40.3	30.0	17.2	8.6	3.0	0.9
Potters.....	100.0	35.3	29.7	19.8	9.8	3.8	1.6
Plasterers.....	100.0	11.2	26.9	24.9	21.9	10.7	5.4
Paper hangers.....	100.0	25.4	32.7	21.7	12.1	5.2	1.9
Total—Occupations with exposure to mineral dust.....	100.0	24.0	29.7	22.7	14.7	6.3	2.6
Cotton-mill operatives.....	100.0	48.3	28.4	14.5	8.0	3.0	0.8
Hosiery and knitting mill operatives.....	100.0	55.9	22.7	11.9	5.3	2.2	1.0
Paper and pulp makers.....	100.0	33.0	31.9	19.5	10.4	3.9	1.3
Cabinetmakers.....	100.0	12.7	22.4	26.5	19.3	11.7	8.4
Total—Occupations with exposure to vegetable fiber dust.....	100.0	39.7	25.6	17.1	10.4	4.8	2.4
Hat and cap makers.....	100.0	27.5	31.1	22.9	11.4	5.1	2.0
Silk-mill operatives.....	100.0	44.4	26.1	17.7	7.7	3.9	1.2
Woolen-mill operatives.....	100.0	36.9	26.9	18.3	10.6	5.4	1.9
Carpet-factory operatives.....	100.0	31.7	26.4	18.4	11.8	6.9	4.8
Upholsterers.....	100.0	26.9	29.4	21.2	13.2	6.8	3.4
Total—Occupations with exposure to animal and mixed fiber dust.....	100.0	33.8	27.9	19.3	10.9	5.6	2.5
All occupied males—Continental United States.....	100.0	26.0	26.3	20.6	14.3	8.1	4.7

TABLE III.—NUMBER OF DEATHS IN VARIOUS OCCUPATIONS IN THE REGISTRATION STATES OF THE UNITED STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Occupation.	Number of deaths due to—					
	All causes in each age group.				Consumption at ages 15 years or over.	Other respiratory diseases at ages 15 years or over.
	15 to 24 years.	25 to 44 years.	45 to 64 years.	65 years or over.		
Compositors, printers, and pressmen.....	94	333	142	89	237	84
Marble and stone cutters.....	13	143	155	81	142	53
Glass blowers and workers.....	17	48	29	13	35	10
Plasterers and whitewashers.....	9	51	54	32	39	25
Total—Occupations with exposure to mineral dust.....	39	242	238	126	216	86
Cabinetmakers and upholsterers.....	19	128	135	164	89	63
Hat and cap makers.....	17	92	74	45	53	33

TABLE IV.—DEATH RATE PER 1,000 IN VARIOUS OCCUPATIONS IN THE REGISTRATION STATES OF THE UNITED STATES, 1900, BY AGE GROUPS.

[From report of the Bureau of the Census on Vital Statistics, 1900.]

Occupation.	Death rate per 1,000 due to—					
	All causes in each age group.				Consumption at ages 15 years or over.	Other respiratory diseases at ages 15 years or over.
	15 to 24 years.	25 to 44 years.	45 to 64 years.	65 years or over.		
Compositors, printers, and pressmen....	5.0	12.3	20.0	106.8	4.4	1.6
Marble and stone cutters.....	3.4	9.3	24.7	122.9	5.4	2.0
Glass blowers and workers.....	4.6	10.9	21.8	82.3	3.7	1.0
Plasterers and white washers.....	7.8	10.7	23.5	88.4	4.5	2.9
Total—Occupations with exposure to mineral dust.....	4.5	9.9	24.0	106.9	4.9	2.0
Cabinetmakers and upholsterers.....	4.6	10.5	19.8	109.6	3.6	2.6
Hat and cap makers.....	5.4	13.1	32.9	173.1	4.2	2.6
All occupied males—Registration States..	5.1	8.8	19.9	98.4	2.4	2.0

TABLE V.—NUMBER OF DEATHS FROM ALL CAUSES, FROM CONSUMPTION, AND FROM OTHER RESPIRATORY DISEASES AMONG OCCUPIED MALES IN RHODE ISLAND, COMPARED, 1897 TO 1906.

[From reports of the Rhode Island state board of health.]

Occupation.	Number of deaths due to—				Per cent of deaths due to—		
	All causes.	Consumption.	Other respiratory diseases.	Consumption and other respiratory diseases.	Consumption.	Other respiratory diseases.	Consumption and other respiratory diseases.
Polishers.....	42	14	20	34	33.3	47.6	80.9
Tool makers.....	44	9	5	14	20.5	11.4	31.9
Jewelers.....	557	173	51	224	31.1	9.2	40.3
Brass workers.....	5	1	.....	1	20.0	.....	20.0
Printers.....	81	21	15	36	25.9	18.5	44.4
Compositors.....	12	3	2	5	25.0	16.7	41.7
Pressmen.....	5	.....	2	2	.....	40.0	40.0
Engravers.....	45	8	4	12	17.8	8.9	26.7
Total—Occupations with exposure to metallic dust.....	791	229	99	328	29.0	12.5	41.5
Stone cutters and marble workers.....	125	40	21	61	32.0	16.8	48.8
Plasterers.....	25	5	4	9	20.0	16.0	36.0
Paper hangers.....	14	3	3	6	21.4	21.4	42.8
Molders.....	157	31	25	56	19.7	15.9	35.6
Total—Occupations with exposure to mineral dust.....	321	79	53	132	24.6	16.5	41.1
Operatives.....	798	218	73	291	27.3	9.1	36.4
Spinners.....	71	18	5	23	25.4	7.0	32.4
Weavers.....	259	67	30	97	25.9	11.6	37.5
Knitters.....	8	5	.....	5	62.5	.....	62.5
Cabinetmakers.....	50	12	9	21	24.0	18.0	42.0
Wood turners and finishers.....	38	5	10	15	13.2	26.3	39.5
Total—Occupations with exposure to vegetable fiber dust.....	1,224	325	127	452	26.6	10.4	37.0
Wool sorters.....	37	5	5	10	13.5	13.5	27.0
Upholsterers.....	25	6	3	9	24.0	12.0	36.0
Total—Occupations with exposure to animal and mixed fiber dust.....	62	11	8	19	17.7	12.9	30.6
All occupied males—State of Rhode Island.....	19,314	3,429	2,420	5,849	17.8	12.5	30.3

TABLE VII.—YEARS OF LIFE LIVED BY OCCUPIED MALES IN CERTAIN OCCUPATIONS, IN ENGLAND AND WALES DURING THE YEARS 1900 TO 1902, BY AGE GROUPS.(a)

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales.]

Occupation.	Years of life lived by males in each age group during 1900 to 1902. (a)						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	17,721	15,942	29,904	24,387	18,522	11,415	5,057
Brass workers.....	22,615	23,010	33,078	21,420	13,443	6,535	2,256
Printers.....	54,976	46,090	78,153	48,465	28,542	13,752	4,553
Total—Occupations with exposure to metallic dust.....	102,612	85,032	141,135	94,272	60,507	31,752	11,766
Glass workers.....	17,700	11,589	20,166	13,167	9,030	4,374	1,309
Potters.....	19,455	17,112	29,463	20,043	12,894	6,406	2,055
Paper hangers and whitewashers.....	19,704	21,786	29,490	27,182	20,181	10,226	3,531
Lithographers.....	5,163	4,848	8,896	6,066	3,510	1,848	693
Total—Occupations with exposure to mineral dust.....	62,022	55,335	88,017	66,438	45,615	22,896	7,959
Cotton manufacture.....	107,298	82,881	135,507	98,739	59,079	27,948	7,965
Hosiery-mill employees.....	4,989	3,825	8,541	8,049	6,150	4,229	2,387
Lace makers.....	6,201	4,461	8,790	8,358	4,281	2,703	1,389
Cordage makers.....	4,095	1,014	3,093	2,820	2,532	2,134	1,332
Paper makers.....	9,237	6,984	10,749	7,512	5,070	2,601	961
Cabinetmakers.....	54,741	46,614	72,924	55,899	39,957	22,842	10,194
Wood turners.....	15,975	13,008	22,161	19,254	15,774	10,866	4,428
Total—Occupations with exposure to vegetable fiber dust.....	202,536	159,687	261,765	200,601	132,843	73,443	30,096
Furriers.....	2,151	2,265	4,341	3,795	2,847	1,265	510
Hatters.....	6,561	4,627	12,981	9,006	6,306	3,225	1,257
Silk workers.....	4,350	2,751	5,829	5,373	3,798	3,249	2,094
Woolen and worsted mill employees.....	39,249	30,222	56,322	44,046	33,132	20,268	8,610
Carpet and rug makers.....	3,114	2,313	4,947	4,134	3,060	1,650	1,002
Total—Occupations with exposure to animal and mixed fiber dust.....	56,425	44,178	84,430	66,854	49,143	29,757	14,373

(a) The years of life as used in this table means three times the number of occupied males enumerated at the census of 1901.

TABLE VII.—MORTALITY DUE TO ALL CAUSES AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Deaths due to all causes in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers	37	53	189	333	461	490	510
Brass workers	64	118	194	274	281	241	189
Printers	179	278	505	494	507	423	384
Total—Occupations with exposure to metallic dust.....	280	449	888	1,101	1,269	1,144	1,083
Glass workers	57	59	136	173	218	183	154
Potters	51	63	155	291	408	347	243
Paper hangers and whitewashers.....	30	75	120	313	387	333	283
Lithographers.....	8	26	50	51	70	57	57
Total—Occupations with exposure to mineral dust.....	146	223	461	828	1,083	920	737
Cotton manufacture.....	288	358	742	949	1,209	1,150	1,014
Hosiery-mill employees.....	5	22	46	54	99	152	503
Lace makers.....	16	12	59	70	50	88	119
Cordage makers.....	9	11	20	21	33	69	141
Paper makers.....	32	28	54	50	56	71	96
Cabinetmakers.....	142	174	379	550	693	700	846
Wood turners.....	31	58	138	225	394	375	411
Total—Occupations with exposure to vegetable fiber dust.....	524	663	1,438	1,919	2,534	2,605	3,127
Furriers.....	8	10	37	49	57	70	55
Hatters.....	19	41	87	103	125	116	130
Silk workers.....	10	9	24	46	68	117	322
Woolen and worsted mill employees.....	86	152	292	392	568	752	1,110
Carpet and rug makers.....	9	12	29	39	56	56	117
Total—Occupations with exposure to animal and mixed fiber dust.....	132	224	469	629	874	1,111	1,734

TABLE VIII.—MORTALITY DUE TO CONSUMPTION AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Deaths due to consumption in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	3	25	88	144	132	60	10
Brass workers.....	14	50	97	97	62	17	1
Printers.....	58	157	285	235	122	47	7
Total—Occupations with exposure to metallic dust.....	75	232	470	476	316	124	18
Glass workers.....	10	21	58	60	44	13	.....
Potters.....	12	23	59	76	92	28	2
Paper hangers and whitewashers.....	8	23	36	108	73	41	6
Lithographers.....	4	13	24	19	15	8	1
Total—Occupations with exposure to mineral dust.....	34	80	177	263	224	90	9
Cotton manufacture.....	88	137	273	285	216	77	17
Hosiery-mill employees.....	3	9	21	20	26	15	3
Lace makers.....	7	5	25	20	11	6	1
Cordage makers.....	1	4	8	7	3	8	2
Paper makers.....	5	9	21	16	9	5	1
Cabinetmakers.....	38	77	159	212	153	62	19
Wood turners.....	10	20	64	73	87	32	6
Total—Occupations with exposure to vegetable fiber dust.....	152	261	571	633	505	205	49
Furriers.....	.....	4	15	18	11	10	3
Hatters.....	4	23	48	37	30	7	.....
Silk workers.....	1	5	14	11	15	12	6
Woolen and worsted mill employees.....	27	72	102	99	94	46	16
Carpet and rug makers.....	2	6	7	13	9	4	1
Total—Occupations with exposure to animal and mixed fiber dust.....	34	110	186	178	159	79	26

TABLE IX.—MORTALITY DUE TO OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Deaths due to other respiratory diseases in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	4	9	34	49	100	119	129
Brass workers.....	7	12	20	44	53	62	43
Printers.....	20	17	43	60	62	71	91
Total—Occupations with exposure to metallic dust.....	31	38	97	153	215	252	263
Glass workers.....	5	7	20	32	52	47	37
Potters.....	9	10	19	66	139	148	72
Paper hangers and whitewashers.....	3	10	23	37	79	91	67
Lithographers.....		1	7	6	6	8	19
Total—Occupations with exposure to mineral dust.....	17	28	69	141	276	294	195
Cotton manufacture.....	27	50	110	149	247	274	227
Hosiery-mill employees.....	1	1	6	6	18	26	103
Lace makers.....		2	3	4	7	21	24
Cordage makers.....		3	3	2	8	19	39
Paper makers.....	3	3	7	9	14	13	16
Cabinetmakers.....	17	20	47	72	118	166	183
Wood turners.....	5	8	16	51	68	93	110
Total—Occupations with exposure to vegetable fiber dust.....	53	87	192	293	490	612	702
Furriers.....	2	3	4	9	5	16	8
Hatters.....		2	10	12	31	35	30
Silk workers.....	3			7	9	12	75
Woolen and worsted mill employers.....	12	7	42	64	102	131	219
Carpet and rug makers.....	1	1	5	4	7	15	29
Total—Occupations with exposure to animal and mixed fiber dust.....	18	13	61	96	154	209	361

TABLE X.—DEATH RATE PER 1,000 DUE TO ALL CAUSES AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Death rate per 1,000 due to all causes in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	2.09	3.32	6.32	13.65	25.97	42.05	100.66
Brass workers.....	2.22	5.13	5.86	12.79	20.90	36.60	82.78
Printers.....	3.19	6.03	6.46	10.19	17.76	30.76	87.61
Total—Occupations with exposure to metallic dust.....	2.73	5.28	6.29	11.68	20.97	36.08	92.62
Glass workers.....	3.22	5.09	6.74	13.14	24.14	41.84	119.38
Potters.....	2.62	3.68	5.26	14.52	31.64	54.15	118.25
Paper hangers and whitewashers.....	1.52	3.44	4.07	11.52	19.18	32.53	72.18
Lithographers.....	1.55	5.36	5.62	8.41	19.94	30.84	82.25
Total—Occupations with exposure to mineral dust.....	2.35	4.02	5.24	12.46	23.74	40.23	92.00
Cotton manufacture.....	2.68	4.32	5.48	9.61	20.46	41.15	127.31
Hosiery-mill employees.....	1.00	5.75	5.39	6.71	16.10	46.11	132.12
Lace makers.....	2.58	2.69	6.71	8.38	11.65	32.56	87.56
Cordage makers.....	2.20	5.75	6.47	7.45	12.03	32.49	105.86
Paper makers.....	3.46	4.01	5.02	6.66	11.05	26.28	94.80
Cabinetmakers.....	2.61	3.73	5.20	9.84	17.34	30.65	82.99
Wood turners.....	1.94	4.46	6.23	11.69	24.98	34.70	92.82
Total—Occupations with exposure to vegetable fiber dust.....	2.59	4.15	5.49	9.57	19.08	35.47	104.00
Furriers.....	3.72	4.42	8.52	12.91	20.02	51.28	107.84
Hatters.....	2.90	6.19	6.70	11.44	19.82	35.97	103.42
Silk workers.....	2.30	3.27	4.12	8.56	17.90	36.01	107.55
Woolen and worsted mill employees.....	2.19	5.03	5.18	8.90	17.14	37.10	128.92
Carpet and rug makers.....	2.89	5.19	5.86	9.43	18.20	33.94	116.77
Total—Occupations with exposure to animal and mixed fiber dust.....	2.38	5.07	5.56	9.48	17.78	37.38	120.64
All occupied males—England and Wales.....	2.44	4.41	6.01	10.22	17.73	31.01	88.39

TABLE XL.—DEATH RATE PER 1,000 DUE TO CONSUMPTION AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Death rate per 1,000 due to consumption in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	0.17	1.57	2.94	5.90	7.13	5.26	1.97
Brass workers.....	.40	2.17	2.93	4.53	4.61	2.58	.44
Printers.....	1.08	3.41	3.65	4.86	4.27	3.42	1.69
Total—Occupations with exposure to metallic dust.....	.73	2.73	3.33	5.05	5.22	3.91	1.54
Glass workers.....	.56	1.81	2.88	4.56	4.87	2.97	.....
Potters.....	.62	1.34	2.00	3.79	7.14	4.37	.97
Paper hangers and whitewashers.....	.41	1.06	1.22	3.98	3.62	4.01	1.53
Lithographers.....	.77	2.68	2.70	3.13	4.27	4.33	1.44
Total—Occupations with exposure to mineral dust.....	.55	1.44	2.01	3.96	4.91	3.94	1.13
Cotton manufacture.....	.83	1.65	2.01	2.89	3.66	2.76	2.13
Woody-mill employees.....	.60	2.35	2.46	2.48	4.23	3.47	.79
Lace makers.....	1.13	1.12	2.84	2.39	2.57	2.22	.74
Cardage makers.....	.24	2.09	2.59	2.48	1.18	3.77	1.50
Paper makers.....	.54	1.29	1.95	2.13	1.78	1.86	1.02
Cabinetmakers.....	.69	1.65	2.18	3.79	3.33	2.71	1.86
Wood turners.....	.63	1.54	2.89	3.79	5.52	2.96	1.36
Total—Occupations with exposure to vegetable fiber dust.....	.75	1.63	2.18	3.16	3.80	2.79	1.63
Furriers.....	.....	1.77	3.46	4.74	3.88	7.33	5.88
Hatters.....	.61	3.47	3.70	4.11	4.70	2.17	.....
Silk workers.....	.28	1.82	2.40	2.05	3.95	3.69	2.69
Woolen and worsted mill employees.....	.69	2.38	1.81	2.25	2.84	2.27	1.86
Carpet and rug makers.....	.64	2.59	1.41	3.14	2.94	2.42	1.06
Total—Occupations with exposure to animal and mixed fiber dust.....	.61	2.49	2.20	2.68	3.24	2.65	1.81
All occupied males—England and Wales.....	.56	1.55	2.08	2.74	3.04	2.16	1.11

TABLE XIII.—DEATH RATE PER 1,000 DUE TO OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

[From Part II, Supplement to the Sixty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales.]

Occupation.	Death rate per 1,000 due to other respiratory diseases in each age group.						
	15 to 19 years.	20 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Tool and instrument makers.....	0.23	0.56	1.14	2.01	5.40	10.42	25.46
Brass workers.....	.24	.52	.60	2.05	3.94	9.42	19.06
Printers.....	.36	.37	.55	1.24	2.17	5.16	20.76
Total—Occupations with exposure to metallic dust.....	.30	.45	.69	1.62	3.55	7.94	22.46
Glass workers.....	.28	.60	.99	2.43	5.76	10.75	28.68
Potters.....	.46	.58	.64	3.29	10.78	23.10	35.04
Paper hangers and whitewashers.....	.15	.46	.78	1.36	3.91	8.89	17.09
Lithographers.....		.21	.79	.99	1.71	4.33	27.42
Total—Occupations with exposure to mineral dust.....	.27	.50	.78	2.12	6.05	12.86	24.50
Cotton manufacture.....	.25	.60	.81	1.51	4.18	9.80	28.50
Hosiery-mill employees.....	.20	.26	.70	.75	2.93	6.01	27.06
Lace makers.....		.45	.34	.48	1.64	7.77	17.66
Cordage makers.....		1.57	.97	.71	3.16	8.95	29.28
Paper makers.....	.32	.43	.65	1.20	2.76	4.83	16.31
Cabinetmakers.....	.31	.43	.64	1.29	2.95	7.27	17.95
Wood turners.....	.31	.62	.72	2.65	4.31	8.61	24.84
Total—Occupations with exposure to vegetable fiber dust.....	.26	.54	.73	1.46	3.61	8.33	23.35
Furriers.....	.93	1.32	.92	2.37	1.76	11.72	15.69
Hatters.....		.30	.77	1.33	4.92	10.85	23.87
Silk workers.....	.69			1.30	2.37	3.69	25.05
Woolen and worsted mill employees.....	.31	.23	.75	1.45	3.08	6.46	25.44
Carpet and rug makers.....	.32	.43	1.01	.97	2.29	9.09	28.94
Total—Occupations with exposure to animal and mixed fiber dust.....	.32	.29	.72	1.45	3.13	7.02	25.12
All occupied males—England and Wales.....	.24	.48	.77	1.66	3.32	6.54	17.77

TABLE XXXI.—DEATHS DUE TO ALL CAUSES AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN THE UNITED STATES, 1897 TO 1906, BY AGE GROUPS.

[From the experience of an industrial insurance company.]

Occupation.	Deaths due to all causes in each age group.						
	15 years or over.	15 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Grinders.....	128	7	24	38	30	20	9
Polishers.....	279	48	75	68	45	19	21
Tool and instrument makers.....	303	40	59	68	56	32	45
Jewelers.....	403	60	74	50	59	77	83
Gold-leaf makers.....	25	2	8	4	3	2	6
Brass workers.....	414	66	112	91	58	54	83
Printers.....	1,590	344	439	345	211	142	108
Compositors.....	168	21	54	32	19	33	9
Engravers.....	192	31	47	42	34	19	19
Total—Occupations with exposure to metallic dust.....	3,502	619	892	739	518	398	336
Stone workers.....	858	21	114	172	232	199	120
Marble workers.....	200	3	30	40	46	50	31
Glass blowers.....	282	24	78	59	55	26	40
Glass cutters.....	116	26	30	27	20	8	5
Potters.....	384	46	68	84	78	72	36
Cement workers.....	88	10	12	19	15	19	13
Plasterers.....	577	25	78	107	127	121	119
Paper hangers.....	319	33	96	74	65	34	27
Foundrymen and molders.....	1,397	122	228	300	292	239	216
Core makers.....	162	66	42	25	9	9	11
Lithographers.....	160	37	45	29	21	18	10
Total—Occupations with exposure to mineral dust.....	4,543	413	821	936	950	795	628
Spinners.....	189	28	38	36	27	37	23
Weavers.....	915	108	174	155	144	137	197
Hosiery and knitting mill employees.....	65	23	22	7	9	3	1
Rope makers.....	109	12	18	17	18	24	20
Paper makers.....	115	13	28	18	15	23	18
Cabinetmakers.....	817	39	61	82	136	197	302
Wood turners.....	127	10	8	17	24	33	35
Wood carvers.....	123	11	20	23	31	21	17
Total—Occupations with exposure to vegetable fiber dust.....	2,460	244	369	355	404	475	613
Furriers and taxidermists.....	105	3	18	30	13	24	17
Hatters.....	832	78	175	185	127	135	132
Silk-mill employees.....	295	82	61	55	31	37	29
Woolen and worsted mill employees.....	106	20	16	14	19	24	13
Carpet and rug makers.....	155	17	22	17	24	34	41
Upholsterers.....	381	39	65	79	73	62	63
Mattress makers.....	41	9	7	11	5	8	1
Total—Occupations with exposure to animal and mixed fiber dust.....	1,915	248	364	391	292	324	296

TABLE XIV.—DEATHS DUE TO CONSUMPTION AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS IN THE UNITED STATES, 1897 TO 1908, BY AGE GROUPS.

[From the experience of an industrial insurance company.]

Occupation.	Deaths due to consumption in each age group.						
	15 years or over.	15 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Grinders.....	63	4	17	24	12	5	1
Polishers.....	108	22	42	29	11	4	—
Tool and instrument makers.....	101	13	35	24	21	4	4
Jewelers.....	113	24	44	22	13	7	3
Gold-leaf makers.....	7	1	4	2	—	—	—
Brass workers.....	161	39	56	41	14	11	—
Printers.....	613	167	247	140	42	13	4
Compositors.....	59	6	36	12	3	1	1
Engravers.....	67	12	29	19	5	2	—
Total—Occupations with exposure to metallic dust.....	1,292	288	510	313	121	47	13
Stone workers.....	302	10	60	82	91	52	7
Marble workers.....	58	—	15	16	16	7	2
Glass blowers.....	85	11	44	15	11	1	3
Glass cutters.....	40	7	14	11	5	1	2
Potters.....	127	11	36	37	22	14	7
Cement workers.....	17	1	3	4	6	3	—
Plasterers.....	136	7	35	38	35	16	5
Paper hangers.....	107	14	47	33	8	4	1
Foundrymen and molders.....	311	29	92	82	65	27	18
Core makers.....	48	20	17	9	1	1	—
Lithographers.....	70	21	28	13	5	3	—
Total—Occupations with exposure to mineral dust.....	1,299	131	391	340	265	129	43
Spinners.....	56	13	19	16	7	1	—
Weavers.....	234	43	93	59	37	15	7
Hosiery and knitting mill employees.....	24	5	15	2	2	—	—
Rope makers.....	28	6	9	7	6	—	—
Paper makers.....	34	6	15	7	2	3	1
Cabinetmakers.....	162	14	34	40	31	29	14
Wood turners.....	25	7	6	3	4	5	1
Wood carvers.....	27	3	9	9	5	1	—
Total—Occupations with exposure to vegetable fiber dust.....	610	97	199	143	94	54	23
Furriers and taxidermists.....	34	1	7	19	4	2	1
Hatters.....	273	42	97	84	34	20	1
Silk-mill employees.....	106	28	32	33	7	4	2
Woolen and worsted mill employees.....	26	7	7	5	4	3	—
Carpet and rug makers.....	37	9	10	6	5	4	3
Upholsterers.....	113	15	38	38	18	3	6
Mattress makers.....	16	4	8	4	2	3	—
Total—Occupations with exposure to animal and mixed fiber dust.....	615	106	194	189	74	39	13

TABLE XV.—PER CENT OF DEATHS DUE TO CONSUMPTION AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS, 1867 TO 1906, BY AGE GROUPS.

[From the experience of an industrial insurance company.]

Occupation.	Per cent of deaths due to consumption in each age group.						
	15 years or over.	15 to 24 years.	25 to 34 years.	35 to 44 years.	45 to 54 years.	55 to 64 years.	65 years or over.
Grinders.....	49.2	57.1	70.8	62.2	40.0	25.0	11.1
Polishers.....	38.7	45.8	56.0	42.6	22.9	21.1	.....
Tool and instrument makers.....	33.3	32.5	59.3	35.3	37.5	12.5	8.3
Jewelers.....	28.0	40.0	59.5	44.0	22.0	9.1	3.6
Gold-leaf makers.....	28.0	50.0	50.0	50.0	.....	.....	.....
Brass workers.....	38.9	59.1	50.0	45.1	24.1	20.4	.....
Printers.....	38.6	48.6	54.3	40.5	19.9	9.2	3.7
Compositors.....	35.1	28.6	66.7	37.5	15.8	3.0	11.1
Engravers.....	34.9	38.7	61.7	45.2	14.7	10.5	.....
Total—Occupations with exposure to metallic dust.....	36.9	46.5	57.2	42.4	23.4	11.8	3.9
Stone workers.....	35.2	47.6	52.6	47.7	39.2	26.1	5.8
Marble workers.....	28.0	.....	50.0	40.0	34.8	14.0	6.5
Glass blowers.....	30.1	45.8	56.4	25.4	20.0	3.8	7.5
Glass cutters.....	34.5	26.9	46.7	40.7	25.0	12.5	40.0
Potters.....	33.1	23.9	52.9	44.0	28.2	19.4	19.4
Cement workers.....	19.3	10.0	25.0	21.1	40.0	15.8	.....
Plasterers.....	23.6	28.0	44.9	35.5	27.6	13.2	4.2
Paper hangers.....	33.5	42.4	49.0	44.6	14.5	11.8	3.7
Foundrymen and molders.....	22.3	23.8	40.4	27.3	22.3	11.3	7.4
Core makers.....	29.6	30.3	40.5	36.0	11.1	11.1	.....
Lithographers.....	43.8	56.8	62.2	44.8	23.8	16.7	.....
Total—Occupations with exposure to mineral dust.....	28.6	31.7	47.6	36.3	27.9	16.2	6.8
Spinners.....	29.6	46.4	50.0	44.4	25.9	2.7	.....
Weavers.....	27.8	39.8	53.4	39.1	25.7	10.9	3.6
Hosiery and knitting mill employees.....	36.9	21.7	68.2	28.6	22.2	.....	.....
Rope makers.....	25.7	50.0	50.0	41.2	33.3	.....	.....
Paper makers.....	29.6	46.2	53.6	38.9	13.3	13.0	5.6
Cabinetmakers.....	19.8	35.9	55.7	48.8	22.8	14.7	4.6
Wood turners.....	19.7	70.0	62.5	17.6	16.7	15.2	2.9
Wood carvers.....	22.0	27.3	45.0	39.1	16.1	4.8	.....
Total—Occupations with exposure to vegetable fiber dust.....	24.8	39.8	53.9	40.3	23.3	11.4	3.8
Furriers and taxidermists.....	32.4	33.3	38.9	63.3	30.8	8.3	5.9
Hatters.....	33.4	53.8	55.4	45.4	26.7	14.8	0.8
Silkmill employees.....	35.9	34.1	52.5	60.0	22.6	10.8	6.9
Woolen and worsted mill employees.....	24.5	35.0	43.8	35.7	21.1	12.5	.....
Carpet and rug makers.....	23.9	52.9	45.5	25.3	20.8	11.8	7.3
Upholsterers.....	31.0	35.5	58.5	48.1	24.7	4.8	9.5
Mattress makers.....	39.0	44.4	42.9	39.4	40.0	37.5	.....
Total—Occupations with exposure to animal and mixed fiber dust.....	32.1	42.7	53.3	48.3	25.3	12.0	4.4

TABLE XVII.—NUMBER AND PER CENT OF DEATHS DUE TO OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG OCCUPIED MALES IN CERTAIN OCCUPATIONS, 1897 TO 1906.

[From the experience of an industrial insurance company.]

Occupation.	Deaths due to respiratory diseases other than consumption.									
	Number due to—					Per cent of deaths from all causes.				
	All respi- ratory di- seases.	Asth- ma.	Bron- chitis.	Pneu- monia.	Other respi- ratory di- seases.	All respi- ratory di- seases.	Asth- ma.	Bron- chitis.	Pneu- monia.	Other respi- ratory di- seases.
Grinders.....	22	3	2	15	2	17.2	2.3	1.6	11.7	1.6
Polishers.....	35	2	3	25	5	12.6	.7	1.1	9.0	1.8
Tool and instrument makers.....	39	4	5	25	5	12.9	1.3	1.7	8.2	1.7
Jewelers.....	49	2	8	37	2	12.2	.5	2.0	9.2	.5
Gold leaf makers.....	5	.....	.....	3	2	20.0	.....	.....	12.0	8.0
Brass workers.....	51	2	1	36	12	12.3	.5	.2	8.7	2.9
Printers.....	221	9	19	169	24	13.9	.6	1.2	10.6	1.5
Compositors.....	25	1	.....	19	5	14.9	.6	.....	11.3	3.0
Engravers.....	22	1	.....	18	3	11.5	.5	.....	9.4	1.6
Total — Occu- pations with exposure to metallic dust	469	24	38	347	60	13.4	.7	1.1	9.9	1.7
Stone workers.....	162	13	30	95	24	18.9	1.5	3.5	11.1	2.8
Marble workers.....	36	3	4	26	3	18.0	1.5	2.0	13.0	1.5
Glass blowers.....	26	1	2	17	6	9.2	.4	.7	6.0	2.1
Glass cutters.....	15	1	.....	12	2	12.9	.9	.....	10.3	1.7
Potters.....	57	18	12	21	6	14.9	4.7	3.1	5.5	1.6
Cement workers.....	8	1	1	5	1	9.0	1.1	1.1	5.7	1.1
Plasterers.....	98	5	14	67	7	16.1	.9	2.4	11.6	1.2
Paper hangers.....	38	.....	3	30	5	11.9	.....	.9	9.4	1.6
Foundrymen and molders.....	277	14	21	211	31	19.8	1.0	1.5	15.1	2.2
Core makers.....	28	.....	1	24	3	17.3	.....	.6	14.8	1.9
Lithographers.....	22	.....	3	18	1	13.8	.....	1.9	11.3	.6
Total — Occu- pations with exposure to mineral dust	762	56	91	526	89	16.8	1.2	2.0	11.6	2.0
Spinners.....	28	4	2	17	5	14.8	2.1	1.1	9.0	2.6
Weavers.....	119	10	18	78	13	13.0	1.1	2.0	8.5	1.4
Hosiery and knitting mill employees.....	3	.....	.....	1	2	4.6	.....	.....	1.5	3.1
Rope makers.....	9	1	2	6	.....	8.2	.9	1.8	5.5	.....
Paper makers.....	10	.....	1	9	.....	8.7	.....	.9	7.8	.....
Cabinetmakers.....	120	14	14	75	17	14.7	1.7	1.7	9.2	2.1
Wood turners.....	21	3	2	11	5	16.5	2.4	1.6	8.6	3.9
Wood carvers.....	16	2	2	9	3	13.0	1.6	1.6	7.3	2.5
Total — Occu- pations with exposure to vegetable fiber dust.....	326	34	41	206	45	13.3	1.4	1.7	8.4	1.8
Furriers and taxid- ermists.....	17	.....	5	9	3	16.2	.....	4.8	8.6	2.8
Hatters.....	97	4	12	71	10	11.7	.5	1.5	8.5	1.2
Silk-mill employees.....	33	2	3	21	7	11.2	.7	1.0	7.1	2.4
Woolen and worsted mill employees.....	17	5	2	8	2	16.0	4.7	1.9	7.5	1.9
Carpet and rug makers.....	26	3	3	16	4	16.7	1.9	1.9	10.3	2.6
Upholsterers.....	46	3	2	33	8	12.1	.8	.5	8.7	2.1
Mattress makers.....	6	.....	.....	6	.....	14.6	.....	.....	14.6	.....
Total — Occu- pations with exposure to animal and mixed fiber dust.....	242	17	27	164	34	12.7	.9	1.4	8.6	1.8

TABLE XVIII.—DEATHS DUE TO ALL CAUSES, TO CONSUMPTION, AND TO OTHER RESPIRATORY DISEASES AMONG MALES IN THE REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1906, BY AGE GROUPS.

[From reports of the Bureau of the Census on Mortality.]

Age at death.	Deaths due to all causes.	Deaths due to consumption.		Deaths due to other respiratory diseases.	
		Number.	Per cent of deaths due to all causes.	Number.	Per cent of deaths due to all causes.
15 to 24 years.....	134,700	37,495	27.8	13,010	9.7
25 to 34 years.....	186,530	58,424	31.3	20,298	10.9
35 to 44 years.....	205,930	48,500	23.6	25,655	12.5
45 to 54 years.....	205,497	30,781	15.0	25,869	12.6
55 to 64 years.....	218,151	17,707	8.1	26,575	12.2
65 years or over.....	435,228	11,949	2.7	60,603	11.6
Total.....	1,386,036	204,856	14.8	162,010	11.7

LIST OF REFERENCES ON OCCUPATION MORTALITY.

- Abraham and Davies: *The Law Relating to Factories and Workshops*. London, 1908.
- Actuarial Society of America: *Specialized Mortality Investigation*. Experience of 24 companies with 98 classes of risks. New York, 1903.
- Adler, M. N.: *Occupation Mortality*. Article in *Journal of the Institute of Actuaries*, Vol. XII, p. 273. London, 1866.
- Andrae, Albert: *Die Sterblichkeit in den land- und forstwirtschaftlichen Berufen nach den Erfahrungen der Gothaer Lebensversicherungs-Bank a. Gotha*. (The Mortality in Agriculture and Forestry from the experience of the Gotha Life Insurance Society). Berlin, 1906.
- Arlidge, J. T., M. D.: *Lectures on Mineral (nonmetallic) Dusts and the Making of Pottery*. Transactions Sanitary Institute, Vol. XIV, p. 102. 1893.
- Arlidge, J. T., M. D.: *Hygiene of Textile Manufactures, Silk, Cotton, Woolen, and Linen Industries*. Transactions Sanitary Institute, p. 137. 1893.
- Arlidge, J. T., M. D.: *Hygiene, Diseases, and Mortality of Occupations*. Percival & Co., London, 1892.
- Ayrton, W. E.: *Improvements Science can Effect in our Trades, and in the Condition of our Workmen*. In *Scientific American Supplement*, No. 211, January 17, 1880.
- Babbage, Charles: *On the General Principles which Regulate the Application of Machinery to Manufacture and the Mechanical Arts*. Article in *Encyclopedia Metropolitana*, Vol. VIII. London, 1849.
- Baines, Edward: *History of the Cotton Manufacture (Chapter XVI)*, on Condition of the Working Classes, with Observations upon Health and Rate of Mortality, p. 433. London, 1835.
- Ballard, Doctor: *On Effluvium Nuisances Arising in Connection with Various Manufacturing and other Branches of Industry*. In Report of the Medical Officer of the Local Government Board for 1876, p. 111. London, 1878.
- Ballard, Doctor: *Second Report on Effluvium Nuisances, etc.* In Annual Report of the Medical Officer of the Local Government Board for 1877, p. 84. London, 1878.
- Ballard, Doctor: *Third Report on Effluvium Nuisances, etc.* In Annual Report of the Medical Officer of the Local Government Board for 1878, p. 42. London, 1879.
- Barlow, Peter: *Elementary Principles of Practical Mechanics and Engineering, with Illustrations of mechanical and manufacturing processes*. Article in *Encyclopedia Metropolitana*, Vol. VIII. London, 1849.

- Barnes, A. E.: Pathology of Grinders' Phthisis. *British Medical Journal*, p. 483, August 22, 1908.
- Barrand, Arthur R.: On the Mortality Experienced by Assured Lives Engaged in Hazardous or Unhealthful Occupations. Fourth International Actuarial Congress. Paris, 1900.
- Beard, Geo. M., A. M., M. D.: Our Home Physician; A Guide, etc. Article on Influence of Occupation on Health and Longevity, p. 332. New York, 1869.
- Bell, John H., M. D.: Anthrax. Article in Oliver's Dangerous Trades, p. 634. London, 1902.
- Bennett, W. H., M. D.: Article on Dust as an Exciting Cause of Disease of the Air Passages. *New York Medical Record*, 1872.
- Bertillon, Jacques, M. D.: Décès par Professions, par Groupes, et par Sexe. (Mortality by Occupation According to Age, Sex, and Causes.) *Annual Statistics of the City of Paris, 1893-1899*.
- Bertillon, Jacques, M. D.: chief of the department of municipal statistics of the city of Paris: Morbidity and Mortality According to Occupation. Translation from the French for the Journal of the Royal Statistical Society, p. 559. London, December, 1892.
- Bertillon, Jacques, M. D.: Classification of Occupations. Publications of the American Statistical Association, Vol. III, p. 379. Boston, 1893.
- Bevan, G. Phillips: The Industrial Classes and Industrial Statistics. 2 vols. London, 1876.
- Bleaching Works, Report on Conditions in. Parliamentary report. London, 1855.
- Blum, Agnes, Dr. med.: Article on Hygienische Fürsorge für Arbeiterinnen und deren Kinder (Hygienic Aspects of Employment of Women and Children in Industries). In *Handbuch der Hygiene*, Vol. VIII, p. 85. Edited by Theodor Weyl. Jena, 1897.
- Blyth, A. W.: Article on Dust, p. 192, and on Occupations in Relation to Consumption, p. 444. *Dictionary of Hygiene and Public Health*, London, 1877.
- Boulnois, Mrs. H. P.: Article on Hygienic Aspects of Occupations Suitable for Women. In *Transactions of the Sanitary Institute*, Vol. XXI, p. 165. London, 1901.
- Boobhyer, Philip, M. D.: Address on Dust as a Factor in the Production of Disease. Read before the Royal Sanitary Institute. London, England. No date.
- Boobhyer, Philip, M. D.: Special Report on Health of Lace Dressing Operatives. In *Annual Report of Board of Health*, Nottingham, England, 1906.
- Bristowe, John Syer, M. D.: Industrial Diseases. Address read before the International Health Congress, Conference on Sanitary Subjects, p. 99. London, 1884.
- Bristowe, John Syer, M. D.: Occupations which have to do with Phosphorus. In *Annual Report of the Medical Officer of the Privy Council*, p. 162. London, 1863.
- Bristowe, John Syer, M. D.: Report on the Rag Trade and Its Influence in Spreading Infections of Disease. In *Eighth Annual Report of the Medical Officer of the Privy Council*, p. 196. London, 1866.
- Brockbank, E. M.: Life Insurance and General Practice. Article on Occupational Mortality, p. 123; Occupational Paralysis, p. 260. London, 1908.
- Bronzing and Lithographic Processes in Relation to Health. First Report on Dangerous Trades, Parliamentary Paper 8149, p. 11. London, 1896.
- Buchanan, Doctor: On the Distribution of Phthisis as Affected by Dampness of Soil. In *Tenth Annual Report of the Medical Officer of the Privy Council*, p. 57. London, 1868.

- Buchanan, Doctor:** On the Health of Destitute Operatives in the Cotton Towns of Lancashire and Cheshire. In *Fifth Annual Report of the Medical Officer of the Privy Council*, p. 290. London, 1863.
- Buffers and Polishers:** Liability to Dust Inhalation. Article in Report of the New York State Factory Inspector, p. 52. Albany, 1893.
- Burton, William:** The Hygiene of the Pottery Trade. In *Shaw Lectures on Industrial Hygiene*, p. 25. London, 1908.
- Campbell, C. T.:** Sick Rates and Death Rates. Article in *Popular Science Monthly*, February, 1885, p. 527. New York.
- Cancer Mortality in the United States, by Occupation.** In Vol. II, *Vital Statistics of the Tenth Census*, p. 576. Washington, 1886.
- Canfield:** Relation of Dusty Occupations to Pulmonary Phthisis. Baltimore, 1889.
- Census of 1890:** Deaths of Males in Certain Occupations, in Certain Cities, and from Certain Causes of Death. Vol. VII, Part II, of Report on Vital Statistics, Table 18, p. 1130. Washington, 1896.
- Census of 1900:** Occupations in Relation to Deaths. Part I, Section XIII, Report on Vital Statistics, p. cclvii, also tables, p. 76. Washington, 1902.
- Chadwick, Edwin, M. D.:** Supplementary Report on the Practice of Interment in Towns. Article on Occupation Mortality and Average Age at Death of Workmen, p. 239. London, 1843.
- Chadwick, Edwin, M. D.:** The Health of Nations. Vol. I, Article on Life as a Commercial Problem, p. 41; Vol. II, Article on Comparative Vitality in Different Classes of the Community, p. 76, and Summary, p. 150. London, 1887.
- Claims of Labor (anon.).** An essay on the Duties of the Employers. Second edition, to which is added, An Essay on the Means of Improving the Health and Increasing the Comfort of the Laboring Classes. London, 1845.
- Cochrane, Chas. H.:** Modern Industrial Progress. Philadelphia, 1904.
- Connecticut Mutual Life Insurance Company, Mortality Experience, 1846-1878,** p. 54. Hartford, Conn., 1884.
- Conrad, Dr. Joh.:** Beitrag zur untersuchung des Einflusses von Lebensstellung und Beruf auf die Mortalitätsverhältnisse, auf Grund les statistischen Materials zu Halle a. S., von 1855-74 (Effect of Occupation on Health). Jena, 1877.
- Cotton Cloth Factories Committee Report; Minutes of Evidence; Parliamentary Returns,** C. 8349. London, 1897.
- Cotton Manufacture. Report on Safeguards for the Prevention of Accidents.** H. S. Richmond, Parliamentary Report, Cd. 3168. London, 1906.
- Cotton Manufacture. Report on the Prevention of Accidents from Machinery.** Parliamentary Paper, C. 9456. London, 1899.
- Cotton Manufacture, United States Census, 1880, Vol. II,** p. 945.
- Cowgill, J. E.:** Article on Occupation as Affecting the Death Rate. *Medical Examiner and Practitioner*. New York, July, 1901.
- Cowgill, J. E.:** Mortality of the United States; Diagrams of the Mortality by Occupation. Indianapolis, 1901.
- Crum, Frederick S.:** The Health and Mortality of the Cotton Mill Operatives of Blackburn, England. *New York Medical Record*, August 11, 1906.
- Crum, Frederick S.:** The Mortality from Consumption in Small Cities. *Quarterly Publications American Statistical Association*. Boston, December, 1907.
- Crum, Frederick S.:** Occupation Mortality Statistics of Sheffield, England, 1890-1907. *Quarterly Publications American Statistical Association*. Boston, December, 1908.

- Dangerous Occupations.** Article in Bulletin of the Massachusetts Bureau of Labor, No. 42, p. 305. Boston, 1906.
- Dangerous Occupations.** Special Report of Massachusetts State Board of Health. Published in Thirty-eighth Annual Report for 1906. Boston, 1907.
- Dangerous Trades.** Reports of Departmental Committee, 1896-1899. Parliamentary Paper, first report, C. 8149 (1896); second, C. 8522 (1897); third, C. 9073 (1898); final report, C. 9509 (1899).
- Dangerous Trades.** The Historical, Social, and Legal Aspects of Industrial Occupations as affecting Health, by a number of experts, edited by Thomas Oliver, M. D. London, 1902.
- Davalos, J. N., M. D., and Jacobson, J., M. D.:** Tuberculosis and the Industry of Tobacco in Cuba. Abstract of address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Deformities of Occupation,** by M. Gabriel Prevost; contributed to *La Science pour Tous*. Reported in part in the Literary Digest (date unknown).
- Degeneracy or Occupation Stress.** Editorial in Journal American Medical Association, July 22, 1899.
- Diseases and Disease Tendencies of Industries.** Twenty-eighth Annual Report of the Bureau of Statistics of Labor and Industry of New Jersey, 1905, p. 175; Twenty-ninth Annual Report, p. 209. Trenton, 1906.
- Dobson, Sir Benjamin:** Humidity in Cotton Spinning. London, 1897.
- Dock, George, M. D.:** Influence of Overwork and Mental Strain in Tuberculosis. Abstract from address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Doehring, C. F. W., Ph. D.:** Factory Sanitation and Labor Protection. Article in Bulletin of the Department of Labor. Washington, January, 1903.
- Drake, Daniel, M. D.:** The Principal Diseases of the Interior Valley of North America, Article on Cotton Ginning. Vol. II, pp. 799-801.
- Duffy, Frank,** secretary of Carpenters' Union of America: Consumption. Abstract of address before International Congress on Tuberculosis. Washington, D. C., 1908.
- Dust; a Neglected Factor in Ill Health,** by Robert Hessler, M. D. Transactions Indiana State Medical Society, 1904.
- Dust and its Relation to Disease.** Circular of Iowa State Board of Health; in report for 1903-1906, p. 105.
- Dust Consumption.** Report of Departmental Committee on Industrial Diseases, p. 213. London, 1907.
- Dust Destructors,** Report on, by the Medical Officer and the Engineer, London County Council. London, 1893.
- Dust Diseases and Their Prevention.** Article in New York Medical Record, p. 47, July 14, 1894.
- Dust Diseases.** Scientific American, volume 88, p. 90, Feb. 7, 1903.
- Dusty Occupations and the Dust Problem.** Second Annual Report New York State Factory Inspector, p. 68. Albany, 1888.
- Elliot, E. B.:** Life Tables of Massachusetts. Sixteenth Annual Report of Registration of Births, Marriages, and Deaths. Boston, 1858.
- Factories and Workshops,** Annual Reports of Chief of. Presented to both Houses of Parliament. London, 1895-1907.
- Factory and Workshop Orders.** London, 1908.
- Fame and Glory of England Vindicated; An Answer to "The Glory and Shame of England"** (anon.). Article on The Factory System of Britain, p. 50. New York, 1842.
- Farr, William, M. D.:** Vital Statistics, p. 392. London, 1885.

- Farr, William, M. D.: Supplement to the Twenty-fifth Report of the Registrar-General of England and Wales. Article on Mortality of Persons in Different Occupations, p. xxxv; and tables, pp. 439-554. London, 1864.
- File Cutting in Relation to Health. Third Report on Dangerous Trades. Parliamentary Paper, C. 9073, London, 1898, p. 6; also final report, Parliamentary Paper, C. 9420, London, 1899, pp. 14 and 25.
- Fisher, Prof. Irving: Mortality Statistics of the United States Census. Publications of the American Economic Association, New York, 1899, p. 121.
- Fisher, Prof. Irving: Economic Loss from Tuberculosis in the United States. Abstract of address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Flax Mills, Report upon, by Commander Hamilton P. Smith, R. N., H. M., Superintending Inspector of Factories. London, 1904.
- Foster, Clement Le Neve, and Haldane, J. S.: The Investigation of Mine Air. London, 1905.
- French, John Marshall, M. D.: Article on Occupation in Relation to Longevity. Medical Examiner and Practitioner, New York, January, 1904.
- Fuller, Dr. M.; Meissner, C.; and Saeger, O.: Hygiene der Berg-, Tunnel- und Hüttenarbeiter (Hygiene of Mining and Metallurgy). In Handbuch der Hygiene, Vol. VIII, p. 225, edited by Theodor Weyl. Jena, 1897.
- Gaertner, Frederick, M. D., Pittsburg, Pa.: Address on the Differentiation of Black Pigment found in the Liver, Spleen, and Kidneys from Coal Dust or other Foreign Deposits. New York Medical Record, Aug. 10, 1907.
- Garvin, L. F. C.: Article on Injurious Effect of Cotton Factories upon Health. In Transactions of the American Public Health Association, Vol. III, p. 69. New York, 1877.
- Gaskell, P.: Artisans and Machinery; the Moral and Physical Condition of the Manufacturing Population, Considered with Reference to Mechanical Substitutes for Human Labor (Chapter VIII, Health and Rate of Mortality; Chapter IX, Peculiar Diseases due to Factory Labor). London, 1836.
- Glass Industry and its Relation to Health. Twelfth Annual Report of New Jersey Bureau of Labor, p. 29. Trenton, 1889.
- Glass Polishing in Relation to Health. Third Report on Dangerous Trades, Parliamentary Paper, C. 9073, p. 46. London, 1898.
- Gordon, Ogilvie (Mrs.): Handbook of Employments. Aberdeen, 1908.
- Gould, Geo. M.: Borderland Studies. Volume II, p. 133. Philadelphia, 1908.
- Government Factories and Workshops Committee. Parliamentary Paper, Cd. 3626. London, 1907.
- Gradenwitz, Alfred, M. D.: Cause of Vitiation of Confined Air. Scientific American Supplement No. 1656, September 28, 1907.
- Graham, George, Registrar-General of Births, Marriages, and Deaths for England and Wales, Fourteenth Annual Report, London, 1855. Article on Mortality of Persons in Different Occupations, pp. xv-xxiii.
- Graham, George: Fifth Annual Report of the Registrar-General. Article on Occupation and Mortality, p. 41. London, 1843.
- Greene, Charles Lyman: Medical Examination for Life Insurance. Article on Occupation, p. 147, Philadelphia, 1900; second edition, p. 156, Philadelphia, 1905.
- Greenhow, Doctor: First Report on Districts with Excessive Mortality from Lung Diseases, in Third Annual Report of the Medical Officer of the Privy Council, London, 1861, p. 102; article on Manufacture of Pottery, p. 102; Cutlery and Other Metal Ware Manufactures, p. 113; Tin and Copper

- Mining, p. 126; Flax Manufacture, p. 145; Silk Manufacture, p. 152; Wool Manufacture, p. 160; Hosiery Manufacture, p. 168; Cotton Manufacture, p. 172; Lace Making, p. 176; Straw Plaiting, p. 183; Glove Making, p. 187; Agricultural Districts, p. 190.
- Greenhow, Doctor: Second Report on Districts with Excessive Mortality from Lung Diseases, in Fourth Annual Report of the Medical Officer of the Privy Council, London, 1862, p. 138; article on Button and various Metal Manufactures, p. 138; Grinders, p. 142; Button Making, p. 143; Brass Founders, p. 144; Pin Pointers, p. 146; Jewelers, p. 147; Ventilation of Workshops, p. 149; Iron and Coal Mining, p. 150; Iron and Steel Manufacture, p. 152; Enamelling process, p. 153; Edge-Tool Manufacture, p. 153; Iron and Coal Mining, p. 154; Silk Manufacture, p. 167; Watchmaking, p. 172; Cotton Manufacture, p. 173; Lace Manufacture, p. 178; Hosiery Manufacture, p. 181; Lace Manufacture, p. 183; Warehouses, p. 185; Mortality of Women and Children, Manufacturing District, p. 187.
- Greenwood, Alfred, M. D.: Annual Report upon the Health of Blackburn, England, 1907. Article on Economic Value of a Reduced Death Rate, p. 314; Cotton Operatives' Mortality Statistics, p. 222. Blackburn, 1908.
- Grindstone Manufacture and Use. Third Report on Dangerous Trades, Parliamentary Paper, C. 9073, p. 68. London, 1898.
- Gulick, Luther, M. D.: Article on When to Quit Working. In *The Labor World*. No date.
- Guy, William A., M. D.: Occupations that Have to do with Emerald Green. In Fifth Report of the Medical Officer of the Privy Council, p. 126. London, 1863.
- Guy, William A., M. D.: Article on Influence of Employment Upon Health. In First Report of the Health of Towns Commission, Vol. I, p. 89. London, 1844.
- Haldane, J. S., M. D.: The Removal of Dust and Fumes in Factories. In Shaw Lectures on Industrial Hygiene, p. 41. London, 1908.
- Halfort, A. C. L., M. D.: Entstehung, Verlauf und Behandlung der Krankheiten der Künstler und Gewerbetreibenden (The Causes, Courses, and Treatment of the Diseases of Artisans and Industrial Workers). Berlin, 1845.
- Hamer, W. H., M. D.: Anthrax. Article in *Oliver's Dangerous Trades*, p. 621. London, 1902.
- Hamilton, Alice: Industrial Diseases; with Special Reference to the Trades in which Women are Employed. Article in *Charities and Commons*. New York, September 5, 1908.
- Hard, William: Article, Where Poison Haunts Man's Daily Work. *Munsey's Magazine*, September, 1907.
- Harrington, Chas., M. D.: Practical Hygiene. Article on Occupation Diseases, p. 661; Dusty Trades, p. 674; Offensive Trades, p. 681. Philadelphia, 1905.
- Hat Industry and its Relation to Health. Twelfth Annual Report of the New Jersey Bureau of Labor Statistics, p. 35. Trenton, 1889.
- Hatters, Vital Statistics of. Published in the Semiannual Reports of the United Hatters of North America.
- Hayes, Denis A.: Length of the Trade Life in the Glass Bottle Industry. Address at conference on labor conditions, in *Proceedings of American Academy of Political and Social Science*, p. 34. Philadelphia, May, 1906.
- Hayward, T. E., M. D.: On the Construction of Life Tables and on their Application to a Comparison of the Mortality from Phthisis in England and Wales during the Decennia 1881-1890 and 1891-1900.
- Hazen, Ed., A. M.: Popular Technology; or, Professions and Trades. In 2 vols. New York, 1843.

- Health of Operatives who are Exposed to Certain Kinds of Dust, by Dr. G. Merkel. Translated for the Medical Record, 1874, p. 273.
- Health of Towns Commission. First Report, Vol. I. Article on Influence of Employment upon Health, p. 89; Different Rates of Mortality Prevalent among Classes of Persons Engaged in Manufactories, p. 267, etc. London, 1844.
- Health of Towns Commission. Second Report, Vol. I. Article on Consumption, etc., Effect Produced by Constantly Living in an Impure Atmosphere, pp. 4 and 116. London, 1845.
- Health of Towns Commission. Second Report, Vol. II. Article on the Atmosphere of Mines, p. 1; Ventilation, p. 33; Supply of Air Required by Different Individuals, p. 64; Mechanical Impurities of the Atmosphere, p. 66; Excess of Mortality in Occupations, p. 238. London, 1845.
- Health and Duration of Trade Life in Different Occupations. Special Investigation of the Bureau of Labor of New Jersey; Twelfth Report (1889), p. 1; Thirteenth Report (1890), p. 357; Fourteenth Report (1891), p. 171; Fifteenth Report (1892), p. 347; Seventeenth Report (1894), p. 81; Eighteenth Report (1895), p. 65.
- Health and its Relation to Occupation. Tenth Annual Report, Ohio Bureau of Labor Statistics, 1886, p. 206.
- Health and Morals in their Relation to Occupation. First Annual Report, Bureau of Labor of New York, p. 85. 1885.
- Health and Safety of Persons Employed in Mines. Parliamentary Report. London, 1864.
- Health in Industries. First Annual Report of the Bureau of Labor of Montana, p. 18. Helena, 1893.
- Health in Industry: Tanning in its Relation to Health. Article in Twenty-ninth Annual Report of the New Jersey Bureau of Labor, p. 209. Trenton, 1906.
- Health in Industry. Third Biennial Report of the Wisconsin Bureau of Statistics, p. 189. 1887-88.
- Health in Various Industries and Causes of Decline. Sixth Annual Report of the New Jersey Bureau of Labor, p. 80. Trenton, 1883.
- Health of Employees in Various Industries. Fifth Biennial Report, Bureau of Labor of California, p. 245. Sacramento, 1891-92.
- Hirt, Dr. Ludwig: Die Krankheiten der Arbeiter (Diseases of Workingmen). Vol. I, Part I, Die Staubinhalations-Krankheiten (Occupations with Exposure to Dust), Breslau, 1871; Vol. I, Part II, Die in Folge der Einathmung von Gasen und Dämpfen entstandenen Krankheiten (Occupations with Exposure to Gas and Steam), Breslau, 1873; Vol. I, Part III, Die in Folge der Beschäftigung mit giftigen Stoffen entstandenen Krankheiten (Occupations with Exposure to Industrial Poisons), Leipzig, 1875.
- Hirt, Dr. Ludwig: Vol. II, Die äusseren (chirurgischen) Krankheiten der Arbeiter (Occupation Liability to Industrial Accidents and Other Bodily Injuries). Leipzig, 1878.
- Hirt, Dr. L., and Merkel, Dr. G.: Die Gewerbekrankheiten (Industrial Diseases). In Handbuch der Hygiene und Gewerbekrankheiten von Pettenkofer und Ziemssen. Gasinhalations-Krankheiten und die gewerblichen Vergiftungen von Prof. Dr. L. Hirt in Breslau; Die Staubinhalations-Krankheiten von G. Merkel in Nürnberg. Leipzig, 1882.
- Hoffman, Frederick L.: Dust as a Factor in Occupation Mortality. Medical Examiner and Practitioner, December, 1907, p. 360. New York.
- Hoffman, Frederick L.: Letter on the Scope and Method of the Eleventh Census; Reference to Occupation Statistics, etc. Published by the American Economic Association, New York, p. 502. 1899.

- Hoffman, Frederick L.: Occupation Mortality Statistics of England and Wales, 1900-1902. In the *Spectator*, October 22, 1908. New York.
- Hoffman, Frederick L.: Physical and Medical Aspects of Child Labor. *Medical Examiner and Practitioner*, August, 1903. New York.
- Hoffman, Frederick L.: Physical and Medical Aspects of Labor and Industry; including statistical table of Occupational Mortality and Estimates of Economic Value of Industrial Labor and Life. In *Annals of American Academy of Political and Social Science*. Philadelphia, 1906.
- Hoffman, Frederick L.: Statistical Laws of Tuberculosis. Address before Maryland Tuberculosis Society. *Maryland Medical Journal*, February, 1904. Baltimore.
- Hoffman, Frederick L.: Problems of Social Statistics and Social Research. Address before the American Statistical Association. *Quarterly Publications of the American Statistical Association*, June, 1908, pp. 105-132. Boston, 1908.
- Hoffman, Frederick L.: The General Death Rate of American Cities. Reference to relation of occupation to health and proportion of wage-earners to the general death rate. *Quarterly Publications of the American Statistical Association*, March, 1906, p. 22. Boston, 1906.
- Hoffman, Frederick L.: The Relation of Occupation to Tuberculosis. *Medical Examiner and Practitioner*, September, 1907, p. 265. New York.
- Hoffman, Frederick L.: Tuberculosis as an Industrial Disease. Abstract of address before the International Congress on Tuberculosis, Washington, D. C., 1908.
- Hoffman, Frederick L.: Vital Statistics of the Census of 1900. *Quarterly Publications of the American Statistical Association*, Boston, 1902. Articles on Mortality from Accidents and Injuries, p. 169; Occupations and Mortality and Problems of Industrial Hygiene, p. 170; Misleading Occupation Death Rates, p. 172; Changes in Occupation Mortality, 1890-1900, p. 174, etc.
- Holland, G. C., M. D.: The Vital Statistics of Sheffield. Article on Mortality in Cutlery Manufacture, pp. 152-205. London, 1843.
- Homan, George, M. D., of St. Louis: Article on the Danger of Dust as a Cause of Tuberculosis. *Journal American Medical Association*, March 23, 1907, p. 1013. Chicago.
- Huber: Article on Occupation and Tuberculosis. In *Journal of American Medical Association*, February 4, 1905. Chicago.
- Hunter, Arthur: Mortality Among Insured Lives Engaged in Certain Occupations Involving Additional Hazard. Address before the Actuarial Society of America, 1907. New York, 1907.
- Hunter, Henry Julian, M. D.: Report on Housing of the Poorer Parts of the Population. In Eighth Annual Report of the Medical Officer of the Privy Council, p. 50. London, 1866.
- Hunter, Henry Julian, M. D.: In Seventh Annual Report of the Medical Officer of the Privy Council. Article on House Accommodation had by Rural Laborers in the Different Parts of England, p. 126. London, 1865.
- Hunter, Robert: A Plea for the Investigation of Labor Conditions Affecting the Length of Trade Life. In *Proceedings of American Academy of Political and Social Science*, p. 38, May, 1906. Philadelphia.
- Hutchinson, Woods, M. D.: Health of Employees as an Investment. *Saturday Evening Post*, Philadelphia, August 24, 1907.
- Improvement of Labor Conditions in the United States. *Proceedings American Academy of Political and Social Science*, Philadelphia, May, 1906.
- Industrial Diseases, Report of Departmental Committee on Compensation for. *Parliamentary Papers*, C. 3495. London, 1907.

- Industrial Hygiene, Shaw Lectures before the Royal Society of Arts. London, 1908.
- Influence of Occupation on Nervous Disorders. Article in New York Medical Journal, December 14, 1907.
- International Conference on Labor. Parliamentary return, dated Home Office, August 3, 1906, being the resolutions of the Berlin Labor Conference concerning agreements as to work in mines, child labor, female labor, etc.
- International Congress (Seventh) of Hygiene and Demography, Vol. VIII, Division II. Article on Mortality in Relation to Occupation, by William Ogle, M. D., p. 12; article, *De la Morbidité et de la Mortalité par Professions*, by Docteur Jacques Bertillon, p. 23; article on Factory Labor in the Indian Spinning and Weaving Mills, p. 232. London, 1892.
- Ireland, George H.: *The Preventable Causes of Diseases, Injury, and Death in American Manufactories and Workshops, and the Best Means and Appliances for Preventing and Avoiding Them*. Lomb prize essay, American Public Health Association, Concord, N. H., 1886.
- James, J. H.: *An Enquiry as to the Duration of Life in Rural Districts*. Second edition. London, 1858.
- Johnston, C., and Bennett, S. R.: *Dust Removal in Grinding Trades*. British Medical Journal, August 22, 1908, p. 481.
- Kay, Joseph, M. A.: *The Social Condition and Education of the People of England*. American edition. New York, 1863.
- King, William A.: Article on Mortality Statistics of the Census in Relation to Occupation. American Journal of Sociology, September, 1897.
- Knight, Charles: *Cyclopedia of Industry of all Nations*. London, 1851.
- Kober, Geo. M.: *Industrial Hygiene*. Bulletin of United States Bureau of Labor, p. 472. 1908.
- Körösy, Dr. Josef von: *Einfluss der Confession, des Wohlstandes und der Beschäftigung auf die Todesursachen (Effect of Confession, Prosperity, and Occupation on Mortality)*. Berlin, 1898.
- Kraft, Max: Article on *Die Lüftung der Werkstätten (Workshop Ventilation)*, in *Handbuch der Hygiene*, Vol. VIII, p. 179, edited by Theodor Weyl. Jena, 1897.
- Latham, John, M. D.: *Mortality from Phthisis in England and Wales; and on the Loss of Life from this Disease in the Various Occupations*. Abstract of address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Laurent, H.: Report on the Mortality in Various Occupations; with diagrams by Doctor Bertillon. Third International Actuarial Congress. Paris, 1900.
- Lead Smelters, Diseases of. Local Government Medical Report, 1878, p. 278.
- Lester, C. Edwards: *The Glory and Shame of England*, Vol. I, p. 283; reference, *Worsted Mills*. London, 1841.
- Letheby, H., M. D.: Report on the Workshop Regulation Act, 1867. London, 1868.
- Letheby, H., M. D.: *The Noxious and Offensive Trades and Manufactures, with Especial Reference to the Best Practicable Means of Abating the Several Nuisances Therefrom*. London, 1875.
- Lewis, Waller, M. D., medical officer to the general post-office: Report on the Laws and Ordonnances in Force in France for the Regulation of Noxious Trades and Occupations. London, 1855.
- Lithographers, Diseases of. Sixth Report of the Medical Officer of the Privy Council, p. 409. London, 1864.

- Lloyd, James Hendrie: Article on Diseases of Occupations. In *20th Century Practice of Medicine*, Vol. III, p. 311. William Wood & Co., New York, 1895.
- Longstaff, Geo. B.: *Studies in Statistics. Article on Occupation Classification*, p. 210. London, 1891.
- Lucifer Matches, Report on Manufacture of; by Thorpe, Oliver, and Cunningham. *Parliamentary Paper*, C. 9188. London, 1899.
- Mapother, Edward Dillon, M. D.: Article on Prevention of Artisans' Diseases. *Lectures on Public Health*, p. 132. Royal Dublin Society, 1874.
- Marshall, Alfred: *Principles of Economics. Article on Influence of Occupation on Health*, p. 277. London, 1898.
- McKay, George A.: Deputy Inspector of Factories. Address on The Effect upon the Health, Morals, and Mentality of Working People Employed in Overcrowded Workshops. Fifth Annual Report of the New York State Factory Inspector, p. 77. Albany, 1891.
- McLauchlan, James J., F. F. A.: On the Mortality in Certain Hazardous or Unhealthy Occupations as Shewn by the Official Statistics. Read before the Institute of Actuaries, London, December 8, 1898.
- McMahon, James, Prof.: Method of Estimating Present Value of the Net Prospective Earnings Lost by Death from Tuberculosis in New York State in One Year. Twenty-eighth Annual Report of the State Department of Health, p. 255. Albany, 1908.
- McNeill, George E.: *Dangerous Trades and Occupations*. Insurance Press, New York, July 28, 1905.
- Merkel, Gottlieb, M. D.: Diseases Caused by the Inhalation of Dust. Translated by Dr. Horatio Bridge, of New York City; in *New York Medical Record*, 1874, p. 442.
- Mettler, L. Harrison, M. D.: *Occupation Neuroses*. Abstract reported in *New York Medical Record*, December 10, 1904.
- Miller, James Alexander, M. D.: Tuberculosis among Printers. Abstract from address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Mills, Charles K., M. D.: Lecture on Mental Overwork and Premature Disease among Public and Professional Men. Published in *Smithsonian Miscellaneous Collections*. No. 594. Washington, 1885.
- Moser, Ludwig: Die Gesetze der Lebensdauer. Ueber die Sterblichkeit in verschiedenen Ständen; über den Einfluss der Krankheiten; die Sterblichkeit in Gefängnissen, etc. (*The Laws of Longevity. Articles on Mortality in various classes; on the Influence of disease; on Mortality in prisons, etc.*), p. 152. Berlin, 1839.
- Mutual Life Insurance Company of New York Mortality Experience, Vol. II. Article on Occupations, p. 42. New York, 1877.
- Nelson, F. G. P.: Contributions to Vital Statistics. Second Edition. Duration of life in various classes, pp. 13-62. London, 1846.
- Nelson, F. G. P.: Contributions to Vital Statistics; with an inquiry into the relation of occupation and locality to life and health. Third edition. London, 1857.
- Nelson, F. G. P.: The Influence of Occupation upon Health. Article in the *Journal of the Institute of Actuaries*, Vol. XVII, pp. 95-120. London, 1873.
- Netolitzky, Dr. A.: Hygiene der Textilindustrie (Hygiene of the Textile Industry). In *Handbuch der Hygiene*, Vol. VIII, p. 1001, edited by Theodor Weyl. Jena, 1897.
- Nevin, John, M. D.: Occupational Diseases. Article in *Medical Examiner and Practitioner*, p. 254. New York, August, 1908.

- Newsholme, Arthur, M. D.: *The Elements of Vital Statistics*. Third edition, p. 169. Swan Sonnenschein & Co., London, 1899.
- Newsholme, Arthur, M. D.: *Occupation and Mortality*. Lectures on Sanitation of Industries and Occupations. Transactions Sanitary Institute, Vol. XIV, p. 81. London, 1893.
- Newsholme, Arthur, M. D.: *Poverty and Disease* (with special reference to Phthisis in Ireland). Address before the Epidemiological Section of the Royal Society of Medicine, London, October 25, 1907.
- Newsholme, Arthur, M. D.: *The Prevention of Tuberculosis*. Article on Occupations, pp. 157 and 327. Dutton & Co., New York, 1908.
- Niven, James, M. D.: *Infection by Phthisis in Workshops in Manchester*. Appendix to address read before the British Congress on Tuberculosis. Transactions, Vol. II, p. 60. London, 1902.
- Noble, Daniel, M. D.: *Facts and Observations relative to the Influence of Manufactures upon Health and Life*. London, 1843.
- Occupational Diseases, appointment of State commission in Illinois to investigate. Referred to in *Journal of American Medical Association*, January 18, 1908.
- Occupation Mortality Statistics. Connecticut Registration Reports, 1881-1907. Hartford, various dates.
- Occupation Mortality Statistics. Massachusetts Registration Reports, 1843-1889. Boston, various dates.
- Occupation Mortality Statistics. New Jersey State Board of Health, Annual Reports, 1903-1907. Trenton, N. J., 1904-1908.
- Occupation Mortality Statistics. Reports of the State Boards of Registration and Health of Vermont. Registration Reports, 1857-1889, and Health Reports, 1900-1906. Montpelier, various dates.
- Occupation Mortality Statistics. Rhode Island Registration Reports, 1853-1906. Providence, various dates.
- Occupations, Safe and Perilous. Article in *Scientific American Supplement*, December 10, 1882.
- Occupations, Special Report of the Bureau of the Census on. Washington, 1904.
- Oesterlen, Fr., Dr.: *Handbuch der medicinischen Statistik*. Sterblichkeit, Lebensdauer bei verschiedenen Beschäftigungen oder Professionen und Ständen (*Handbook of Medical Statistics*. Article on Occupational Mortality), p. 202. Tübingen, 1874.
- Ogle, William, M. D.: Supplement to the Forty-fifth Annual Report of the Registrar-General of England and Wales. Article on Mortality of Males Engaged in Different Occupations, p. xxi; Influence of Dust, p. lviii; Mean Annual Death Rate, p. cxvii.
- Oliver, Thomas, M. D.: *China and Earthenware Manufacture, Potters' Rot*. Article in *Dangerous Trades*, p. 382. London, 1902.
- Oliver, Thomas, M. D.: *Diseases of Occupation*. Dutton & Co., New York, 1908.
- Oliver, Thomas, M. D.: *Dust as a Cause of Occupation Disease* (with illustrations of micro-photography). Article in *Dangerous Trades*, p. 267. London, 1902.
- Oliver, Thomas, M. D.: *Dust Women*. Article in *Dangerous Trades*, 278. London, 1902.
- Oliver, Thomas: *The Etiology and Prevention of Pneumonokoniosis*. *British Medical Journal*, p. 481, August 22, 1908.
- Oliver, Thomas, M. D.: *Lucifer Match Making*. In *Shaw Lectures on Industrial Hygiene*, p. 5. London, 1908.

- Oliver, Thomas, M. D.: *Metallic Poisons*. Transactions Sanitary Institute, Vol. XIV, p. 154. London, 1893.
- Oliver, Thomas, M. D.: *Miscellaneous Occupations*. Article on Upholsterers, p. 789; Joiners and Carpenters, p. 790; Workers in Sequoia Wood, p. 790; Glass Manufacture—Glass Blowing, p. 804; Manufacture and Use of Emery Wheels, p. 813; in *Dangerous Trades*. London, 1902.
- Oliver, Thomas, M. D.: *Physiology and Pathology of Work and Fatigue*. Article in *Dangerous Trades*, p. 104. London, 1902.
- One Hundred Years of American Commerce (1795-1895). 2 vols., edited by Chauncey M. Depew. New York, 1895.
- Oppenheimer, Seymour, M. D.: *Effect of Certain Occupations on the Pharynx*. New York Medical Record, December 16, 1899.
- Ord, William, M. D.: In Sixth Report of the Medical Officer of the Privy Council. Article on the Sanitary Circumstances of Dressmakers and other Needlewomen, London, p. 362. London, 1864.
- Order of the Secretary of State making Regulations for the Protection of Health in Cotton Cloth Factories. Parliamentary Returns. Dated London, February 18, 1898.
- Parkes, E. A.: *Manual of Practical Hygiene*. Article on Diseases of Operatives, Vol. I, pp. 133-136. William Wood & Co., New York, 1883.
- Parry, Leonard A., M. D.: *The Risks and Dangers of Various Occupations and their Prevention*. Scott, Greenwood & Co., London, 1900.
- Physical and Moral Condition of the Children and Young Persons Employed in Mines and Manufactures*. Parliamentary Report. London, 1848.
- Polishing and Buffing*. Article in Annual Report of the New York State Factory Inspector, p. 32. Albany, 1899.
- Polishing Wheels, Construction of, etc.* Scientific American Supplement, No. 1560, pp. 25130, 25140, January 27, 1906.
- Potter, Alonzo, M. D.: *The Principles of Science Applied to the Domestic and Mechanic Arts*. Boston, 1841.
- Pottery Industry and its Relation to Health*. Twelfth Annual Report of the New Jersey Bureau of Labor, p. 39. Trenton, 1889.
- Pottery Industry, Diseases and Disease Tendencies of Industries*. In Report of New Jersey Bureau of Labor Statistics, p. 107. Trenton, 1908.
- Pottery Industry, Health Conditions in*. Article in Twenty-eighth Annual Report of New Jersey Bureau of Labor, p. 175. Trenton, 1905.
- Printworks, Bleaching and Dyeing Works Acts*. Parliamentary Report on Conditions in these Trades. London, 1860.
- Prudential Insurance Company of America: Industrial occupation mortality statistics, exhibits of diagram and charts at International Exposition, Paris, 1900; International Congress on Tuberculosis, London, 1901; Pan American Exposition, Buffalo, 1901; International Exposition, St. Louis, 1904; Jamestown Ter-Centennial Exposition, 1907; International Congress on Tuberculosis, Washington, 1908*. Also address by Frederick L. Hoffman, statistician, Prudential Insurance Company of America, on Relation of Occupation to Tuberculosis, American Association of Life Insurance Medical Examiners, Atlantic City, 1907; address on Dust as a Factor in Occupation Mortality, New York County Medical Society, 1907; and address on Tuberculosis as an Industrial Disease, International Congress on Tuberculosis, Washington, 1908.
- Purdon, Harry S., M. D.: *Flax and Linen Manufacture*. Article in *Dangerous Trades*, p. 691. London, 1902.
- Ramazzini, Bern.: *A Treatise of the Diseases of Tradesmen*. London, 1705.

- Ramazzini, Bern.: *The Diseases of Tradesmen*, Reference to, in *Journal of the Institute of Actuaries*, Vol. I, p. 84. London, 1851.
- Ramsey, M. E., M. D.: *Practical Life Insurance Examination*. Article on Occupation, p. 20. Philadelphia, 1908.
- Ransome, Arthur, M. D.: *The Need of a Standard of Efficient Ventilation in Work-places and Places of Public Assemblies*. *Transactions of British Congress on Tuberculosis*, Vol. II, p. 120. London, 1902.
- Ratcliffe, Henry: *Observations on the Rate of Mortality and Sickness—Friendly Societies Particularized for Various Trades, Occupations, and Localities*. Manchester, 1850.
- Renk, Dr. Friedrich: *Die Luft (The Air)*, in *Handbuch der Hygiene*, Pettenkofer and Ziemssen. Leipzig, 1886.
- Report of the Royal Commission on Noxious Vapours. *Parliamentary Paper*, C. 2159. London, 1878.
- Richardson, B. W.: *Diseases of Modern Life*. Article on Induced Diseases from Physical Strain, p. 148; Diseases from Impurity of the Air, p. 375; Diseases Incident to Some Occupations, p. 397. New York, 1876.
- Richardson, B. W.: *Unhealthy Trades*. Lectures before the Society of Arts; reprinted in *Scientific American Supplement* No. 9 (February 26, 1876); No. 10 (March 4, 1876); No. 13 (April 29, 1876); No. 19 (March 6, 1876); No. 22 (May 27, 1876).
- Roth, Dr. Em.: Article on *Allgemeine Gewerbehygiene und Fabrikgesetzgebung (Industrial Hygiene and Factory Legislation)*, in *Handbuch der Hygiene*, Vol. III, edited by Theodor Weyl. Jena, 1897.
- Royce, Samuel: *Deterioration and Race Education*. Article on Factory Population, p. 41; Consumption, p. 42; Effect of Trades on Health, pp. 448 et seq.
- Rumsey, Henry W., M. D.: *Essays and Papers on Some Fallacies of Statistics Concerning Life and Death, Health and Disease*, p. 234. London, 1875.
- Russell, Archibald: *Principles of Statistical Inquiry*. Article on Occupations in Which the Inhabitants are Engaged, p. 121. New York, 1839.
- Russell, James B., M. D.: *On Certain Cases of Sickness and Death Occurring Among Workers in Horsehair Factories*. In *Annual Report of the Medical Officer of the Local Government Board*, 1878, p. 321. London, 1879.
- Samwer, Karl: *Address on the Mortality in Certain Occupations*. Read before the Third International Actuarial Congress, Paris, 1900. (In French.)
- Samwer, Dr. Karl: *Die Sterblichkeit der Aerzte, Geistlichen und Lehrer nach den Erfahrungen der Gothaer Lebensversicherungs-Bank (Report on the Mortality of Physicians, Clergymen, and Teachers in the Experience of the Life Insurance Company of Gotha)*. Address before the Third International Actuarial Congress, Paris, 1900.
- Sanitary Commission of Massachusetts. *Reference to Influence of Occupation on Health*, pp. 85, 129, and 508. Boston, 1850.
- Sanitary Condition of the Laboring Population, *Parliamentary Report on the*. London, 1842. Article on Erroneous Inferences as to the Effect of Particular Occupations, p. 113 (including remarks upon tobacco, tailoring, etc.); article on Comparative Chances of Life in Different Classes of the Community, p. 153; article on the Most Advantageous Construction for Securing the Health of Work People in Factories, p. 240.
- Sanitary Economy, *Its Principles and Practice* (anon). Rich and Poor, p. 126; Condition in Manufactures, p. 171; Considerations as to Unhealthy Occupations, p. 245. Edinburgh, 1850.
- Sanitary Institute *Transactions*, Vol. XXIII, 1902, p. 209. Address by Sir James Crichton-Browne, M. D., on The Dust Problem.

- Schafer, Dr. H.: Article on Hygiene der Glasarbeiter und Spiegelbeleger (Hygiene of Glass and Mirror Manufacture). In *Handbuch der Hygiene*, Vol. VIII, pp. 971, edited by Theodor Weyl. Jena, 1897.
- Scotland: Supplement to the Thirty-eighth Detailed Annual Report of the Registrar-General of Births, Deaths, and Marriages in Scotland. Edinburgh, 1895. Occupation Mortality Statistics for 1890-1892, pp. xlii-lix.
- Scotland: Supplement to the Forty-eighth Detailed Annual Report of the Registrar-General of Births, Deaths, and Marriages in Scotland. Glasgow, 1905. Occupation Mortality Statistics for 1900-1902.
- Scott, Alexander: The Notification of Industrial Diseases. *British Medical Journal*, August 22, 1908, p. 488.
- Scottish Amicable Life Assurance Society: Mortality Experience, 1820-1860, by Hazardous and Nonhazardous Occupations. *Journal Institute of Actuaries*, Vol. X, p. 61. London, 1861.
- Scurlfield: Mortality of Dusty Trades in Sheffield. *British Medical Journal*, August 22, 1906, p. 480.
- Seaton, Doctor: Report on Certain Offensive Trades in Southwark. Ninth Annual Report of the Medical Officer of the Privy Council, p. 209. London, 1867.
- Shadwell, Arthur, M. D.: Industrial Efficiency, New York, 1906. Article on Industrial Districts of America, Vol. I, p. 243; Factory Laws, Vol. II, p. 1; Factory Conditions, p. 47; Social Conditions, p. 252.
- Sheffield, England, Annual Reports on the Health of. Special Tables and Observations on Mortality in Sheffield Trades, 1889-1907.
- Simon, John, C. B., F. R. S.: Article on Industrial Diseases. In Annual Report of the Medical Officer of the Privy Council, p. 10. London, 1863.
- Simon, John, C. B., F. R. S.: Public Health Reports. (Privy Council Medical Report, 1858-1872; Local Government Medical Reports, 1874-1876; Privy Council Medical Report, 1874-1877, etc.) Reprinted by the Sanitary Institute of Great Britain, in two volumes. London, 1887.
- Simon, John, C. B., F. R. S.: Question of Pecuniary Compensation for Commercial and Administrative Injuries to Health. Twelfth Annual Report of the Medical Officer of the Privy Council, p. 34. London, 1870.
- Simon, John, C. B., F. R. S.: Remarks on the Present State of the Law as Regards the Recovery of Compensation by Persons who have been Injured in Health or by Loss of Relatives, Through the Fault of Local Authorities or Water Companies. In Tenth Annual Report of the Medical Officer of the Privy Council, p. 12. London, 1868.
- Simon, Robert M., B. A.: Copper and Brass. Article in *Dangerous Trades*, p. 455. London, 1902.
- Sizing Processes in Cotton Manufacture. Parliamentary Returns. London, May 13, 1872.
- Smee, A. H., M. R. C. S.: Tables and Diagrams Illustrating the Comparative Death Rates from Various Causes and in Various Occupations. London, 1901.
- Smith, Edward, M. D.: On the Nourishment of the Distressed Operatives in the Cotton Towns of Lancashire and Cheshire. In Privy Council Medical Report, p. 320. London, 1863.
- Smith, Edward, M. D.: In Sixth Report of the Medical Officer of the Privy Council. Article on the Sanitary Circumstances of Printers in London, p. 416. London, 1864.
- Smith, Richmond Mayo: Statistics of Occupation. Article in *Essays on the Federal Census*, published by the American Economic Association, p. 78. New York, 1899.

- Smith, Watson, F. I. C.: *Manufacture of Alkalis and Acids*. Transactions Sanitary Institute, Vol. XIV, p. 169. London, 1898.
- Sommerfeld, Dr. Th.: *Handbuch der Gewerbekrankheiten* (Handbook of Industrial Diseases), Vol. I. Berlin, 1898.
- Sommerfeld, Dr. Th.: Article on Hygiene der Steinmetzen und Maurer (Hygiene of Stone Cutters and Stone Masons, etc.). In *Handbuch der Hygiene*, Vol. VIII, p. 947, edited by Theodor Weyl. Jena, 1897.
- Sonne, Dr. Wilhelm: Article on Hygiene der Keramischen Industrie (Hygiene of the Pottery Industry). In *Handbuch der Hygiene*, Vol. VIII, p. 911, edited by Theodor Weyl. Jena, 1897.
- Special Regulations for Dangerous and Unhealthy Industries Enforced by the Factory Inspectors in England. Twenty-fourth Annual Report of the New York State Bureau of Labor Statistics, p. 883. Albany, 1907.
- Squire, Rose E.: *Rabbit Down Manufacture*. Article in *Oliver's Dangerous Trades*, p. 724. London, 1902.
- Standen, William T.: *Effect of Occupation and Habits on Health and Life Insurance Risks*. No date.
- Stevens, Geo. A.: *The Health of Printers*. Twenty-fourth Annual Report of the New York State Bureau of Labor Statistics, 1906, pp. lxxi-clil. Albany, 1907.
- Stickler, J. W., M. D.: *On Hatters' Consumption*. Reprinted from *New York Medical Journal*, May 29, 1886.
- Stockton-Hough, John, M. D.: of Philadelphia. Article on Relative Influence of City and Country Life on Mortality. No date.
- Stuart, John A. E., M. D.: *Rags and Their Product in Relation to Health*. Article in *Oliver's Dangerous Trades*, p. 644. London, 1902.
- Symonds, Brandreth: *Life Insurance Examination*. Article on Occupation, p. 107. New York, 1905.
- Tatham, John, M. D.: *Dust-Producing Occupations*. Article in *Oliver's Dangerous Trades*, p. 134. London, 1902.
- Tatham, John, M. D.: *Mortality of Occupations*. Article in *Oliver's Dangerous Trades*, p. 118. London, 1902.
- Tatham, John, M. D.: *Report on the Mortality of Males in Certain Occupations, 1890-1892, and on an English Healthy District Life Table for the ten years 1881-1890*. Supplement to the Fifty-fifth Annual Report of the Registrar-General of England and Wales, Vol. II. London, 1897.
- Tatham, John, M. D.: *Report on the Mortality in Various Occupations in the three years 1900-1902*. Supplement to the Sixty-fifth Annual Report of the Registrar-General of England and Wales, Part II. London, 1908.
- Thackrah, C. Turner: *The Effects of Arts, Trades, and Professions and the Civic States and Habits of Living on Health and Longevity, with Suggestions for the Removal of Many of the Agents which Produce Disease and Shorten the Duration of Life*. Second edition. London, 1832.
- Thomson, J.: *Hats and Felting*. Philadelphia, 1868.
- Tiepen, J. J. H.: *On the Best Plan for Preparing and Publishing Government Statistics Concerning Dangerous Occupations and the Mortality Therein*. Address before Fourth International Actuarial Congress, New York, 1903.
- Tissot, S. A., M. D.: *An Essay on the Disorder of People of Fashion; and a Treatise on the Diseases Incident to Literary and Sedentary Persons*. Edinburgh, 1772.
- Tomlinson, Charles: *Cyclopedia of Useful Arts*. London, New York, 1852. (In 4 volumes.)
- Tomlinson, Charles: *The Useful Arts and Manufactures of Great Britain; first series, Textile Fabrics*. London. No date.

- Tomlinson, Charles: *The Useful Arts and Manufactures of Great Britain*;—second series, Metals, Chemical Manufactures, etc. London. No date.
- Towles, John K.: *Factory Regulation in Rhode Island*. Publications of the American Economic Association, Vol. IX, No. 3, October, 1908. New York.
- Tracy, Roger S.: Article on Dusty Occupation. In *Second Annual Report of the New York State Factory Inspector for 1888*, p. 68. Albany, 1889.
- Tracy, Roger S., M. D.: *Hygiene of Occupations*. In *Buck's Hygiene and Public Health*, Vol. II. New York, 1879.
- Tuberculosis, Report of Special Commission appointed to investigate. Article on Factory Conditions, p. 37. Hartford, Conn., 1908.
- Tyndall, John: A Combat with an Infective Atmosphere. Article in *Popular Science Monthly*, April, 1877.
- Upson, Charles R., M. D.: Mensuration as an Aid to the Diagnosis of Pulmonary Tuberculosis. Article in *American Medicine*, May 31, 1902.
- Ure, Andrew, M. D.: *Dictionary of Arts and Manufactures with Supplement*. (3 volumes.) New York, 1868.
- Velvet Works: Ending and Mending Processes. Third report on Dangerous Trades, p. 30; also fourth report, Parliamentary Paper, C. 9420, p. 5. London, 1899.
- Ventilation of Factories. Article in *Eighth Annual Report of the New York State Factory Inspector for 1893*, p. 42. Albany, 1894.
- Ventilation of Factories and Workshops. Report of Departmental Committee, First and Second, with Appendix. Parliamentary Reports, C. 1302 and Cd. 3552. London, 1902–1907.
- Vital Statistics, Tenth Census (for 1880), 2 vols., Washington, 1885 (no occupation mortality analysis); Eleventh Census (for 1890), 2 vols., Washington, 1894–95; Twelfth Census (for 1900), 2 vols. Washington, 1902.
- Vocation and Longevity. *New York Medical Record*, April 12, 1902.
- Wade, John: *History of the Middle and Working Classes* (third edition). Article on Effect of Trades on Health, p. 244; Table of Comparative Duration of Life in Agricultural and Manufacturing Districts, p. 560. London, 1835.
- Walford, C.: *Insurance Cyclopedia*. Article on Practice of Friendly Societies with Reference to Unhealthful Trades, Vol. IV, p. 584. London, 1876.
- Ward, S. H., M. D.: Occupations, etc.; Influence on Health. Article in *Journal of the Institute of Actuaries*, Vol. VIII, pp. 255–263. London, 1860.
- Welfare Institutions in Austria (*Die Wohlfahrts-Einrichtungen der Arbeitgeber zu Gunsten ihrer Angestellten und Arbeiter in Österreich*), Vol. II. Published by the Imperial and Royal Statistical Bureau of the Department of Commerce. Vienna, 1904.
- Welfare Work, Report on Conference on. Published by the National Civic Federation, New York, 1904.
- Westergaard, Harold: *Die Lehre von der Mortalität und Morbidität* (Mortality and Morbidity). Anthropologisch-Statistische Untersuchungen. Anthropological-Statistical Investigations, chaps. XV to XVIII. Auch Berufsänderungen (also occupation changes), p. 134. Jena, 1901.
- Westergaard, Harold: Occupation Mortality, with special reference to the Statistics of Scotland. Article in *Ehrendzweigs Insurance Year Book*, 1907.
- Wheatley, James, M. D.: Manufacture of Cotton. Article in *Oliver's Dangerous Trades*, p. 702. London, 1902.
- Wheatley, James, M. D.: Trade Mortality Statistics. Reprinted from *Public Health*, February, 1903.

- White, Sinclair, M. D.: *Metallic Dusts, Cutlery, Tool Making, and Metal Trades*. Transactions Sanitary Institute, Vol. XIV, p. 117, 1893.
- White, Sinclair, M. D.: *Steel Grinding*. Article in *Oliver's Dangerous Trades*, p. 408. London, 1902.
- Whitley, George, M. D.: *Report on Industrial Diseases*; in *Sixth Annual Report of the Medical Officer of the Privy Council*. Article on Occurrence of Lead Poisoning Among Persons who Work with Lead or its Preparations, p. 350; Occurrence of Mercurial Preparations, p. 358. London, 1864.
- Wierdema, H. V., M. D.: Article on Visual Acuity in Various Trades. In *Journal American Medical Association*, February 8, 1902. Chicago.
- Wilbur, Cressy L.: *Mortality Statistics of the Eleventh Census*. Article, *American Economic Association*, p. 108. New York, 1899.
- Willcox, Walter F.: *Economic Loss from Tuberculosis in the State of New York*. Abstract from address before International Congress on Tuberculosis, Washington, D. C., 1908.
- Willcox, Walter F.: *Economic Value of Loss of Life from Tuberculosis*. Article in *Vital Statistics of New York State in 1907*. Albany, 1908.
- Willets, Gilson, and others: *Workers of the Nation*. Dodd, Mead & Co. (2 vols.), New York, 1903.
- Williams, C. Theodore, M. D.: Article on Diseases, Accidents, and Occupation, Deaths. In *American Exchange and Review*, Philadelphia, December, 1904.
- Wilson, G. B.: *Air-Conditioning in Textile Factories*, p. 25. John Wiley & Sons. New York, 1908. (Reference to Suitable Textile Conditions and Their Relation to Health.)
- Wilson, Harry J.: *Jute Manufacture*. Article in *Oliver's Dangerous Trades*, p. 650. London, 1902.
- Winslow, C. E. A.: *Sanitary Dangers of Certain Occupations*. Bulletin of Massachusetts Association of Boards of Health. Boston, 1904.
- Wool Sorting and Kindred Trades. Report of the Dangerous Trades (Anthrax) Committee; Parliamentary Report, C. 8506. London, 1907.
- Wright, Carroll D.: *Report on the Factory System of the United States*. Tenth Census. Article on Effect of the Factory upon Health, p. 26. Washington, D. C., 1882.
- Wynne, James, M. D.: *Report on the Vital Statistics of the United States made to the Mutual Life Insurance Company of New York, 1857*, p. 205.
- Wynter, A., M. D.: *Curiosities of Civilization*. Article on Mortality in Trades and Professions, pp. 499-535. London, 1860.

CHARITY RELIEF AND WAGE EARNINGS.

BY S. E. FORMAN.

INTRODUCTION.

This article is a study of the relief given by the Associated Charities in the city of Washington, D. C., in 1905. The investigation deals with the cases of several thousand persons who sought relief at the door of charity. The aim of the study is to determine the relation which exists between the charity relief and the earnings of the recipients, and to discover to what extent this distress was due to low wages or to a lack of employment, and to what extent other causes figured in the distress.

The result of the study will be better understood if consideration is first given to the aims and methods of the Associated Charities. Those aims and methods have been recently formulated as follows:

1. To bring about the adequate treatment of each needy individual or family upon the basis of an adequate understanding of the needs and resources.

2. To promote cooperation between all the philanthropic forces, the public and private charities, the churches, municipal authorities, and benevolent individuals of the community, in order that the efficiency of all may be increased and each enabled to do its own best work in its own best way.

3. To obtain and administer material aid where necessary, endeavoring to secure the assistance from appropriate organizations and individuals, and not to interfere with or unnecessarily decrease in any case the responsibility of agencies or persons from whom the relief should be derived.

4. To enlist, organize, and direct volunteer workers, including division conference members, friendly visitors, savings collectors, conductors of outing parties, office assistants, and helpers in other lines.

5. To prevent pauperism and dependence, to discourage begging and the giving of alms without adequate investigation, to expose deliberate imposture or fraud, to not merely palliate distress but to relieve it permanently, and in every case to develop all the possibilities of self-help.

6. To improve home life, develop character, and elevate the standards of life, to prevent children from growing up as paupers, and to aid needy families in securing for ruptured and deformed children such treatment as will prevent permanent disabilities and dependence.

7. To aid in the diffusion of knowledge as to conditions of life in neglected neighborhoods or among needy families and as to the best methods of philanthropic work. To suggest, stimulate, inaugurate, or undertake such efforts for remedial, preventive, or constructive social service as shall from time to time seem wise.

8. To maintain a careful, thorough system of confidential records so that all the essential knowledge obtained regarding needy families may be immediately available, in confidence, for the guidance of persons having a legitimate charitable interest.

9. To exclude from every department of its work all questions as to sectarian religious belief, politics, or nationality, and to allow no representative of the association to use his or her position for the purpose of proselytism.

From the above official statement it will be seen that an office of the Associated Charities is not primarily a relief station. It is rather a clearing house where various charitable influences are so coordinated and directed that overlapping, waste, and fraud are either wholly prevented or reduced to a minimum. Relief of some kind is given to almost every family that applies to the Associated Charities, but it is not always material relief—such as money, food, or clothing. The chief object of the association is to enable the applicant to help himself. "Every case is studied carefully, unnecessary relief is refused, employment is secured, the good influence of relatives, employers, and other natural helpers is enlisted, and every possibility of self-help is as far as possible discovered and emphasized."(*) Such a policy reduces the giving of material aid to the lowest point. Of the 4,377 families dealt with in the charity year ending June 30, 1906, only 1,050 were given material relief. After such a sifting process a family is not likely to receive material aid unless there is actual distress.

A phase of the society's work that is of great interest is its system of gathering and recording all pertinent facts relating to the family applying for aid. This inquiry begins when application for assistance is made. The investigation is informal and unobtrusive, but thorough and painstaking. Information about the family is sought from the most direct sources. Letters of applicants and the representations of proxies may set in motion an investigation, but they will not suffice to place the family upon the roll of recipients. A personal inspection of home conditions by the charity agent must be made before the merits or demerits of an application are passed upon. In cases of emergency or when the work of the office is heavy this rule is not always strictly followed. At such times the giving of aid may precede the investigation; but the general policy and the habitual

* Annual Report of the Associated Charities of the District of Columbia, 1906, p. 6.

practice of the society is to furnish aid only in the light of the fullest knowledge possible.

The investigation into the merits of an application usually begins in the charity office. When a request is made that aid be given to a family, if the person asking for aid is not a member of the family, or is a child, the agent probably will not entertain the request at all, but will demand that a responsible member of the family come to the office. If the wife or husband or grown child comes and makes known the needs of the family, the agent in a conversational way draws from the applicant everything about the family that may have a bearing upon the subject in hand. Inquiry is made as to the size of the family, the ages of the children, the conjugal conditions that prevail, the occupations of the members of the family, the wages received, the names of employers and friends, and church affiliations. Having noted these and other relevant facts, the agent, withholding aid for the time being, promises to visit the home of the applicant at the earliest possible moment. Only in rare instances does the first interview result in the immediate giving of doles. As soon as it can be arranged the agent goes to the home of the applicant, where the inquiry is continued far beyond the point to which it was carried at the office and until sufficient information is obtained regarding the family to make it possible to deal with the case intelligently.

The facts brought out by the investigation are arranged in order, typewritten, and placed in a large envelope which becomes the receptacle for the charity record of the family and for all documents bearing upon that record. In this envelope are found letters applying for aid, letters expressing thanks for aid received, letters from friends and relatives of the family, letters of recommendation, correspondence of charity officials, newspaper clippings containing information about the family, ejectment notices, evidences of chattel-mortgage transactions, and notes of promise. Every item throwing light upon the charity side of the family's history is carefully preserved. In the majority of cases the record is brief and the contents of the envelope are small, but in many cases where the charity record extends over many years the contents of the envelope, if printed, would make a good-sized volume.

The conclusions of this article are based upon a study of 19,000 envelopes found in the 8 charity offices of the city of Washington. Every envelope containing a record of material relief, such as money, food, clothing, or shelter given in 1905 has been examined. The work has been conducted in the charity offices, and in numerous cases when there was perplexity or doubt the writer has been assisted by the charity agents.

NUMBER, NATIVITY, AND SIZE OF THE FAMILIES.

In dealing with charity cases the efforts of the organization are directed toward the family regarded as a social unit. Likewise in studying these charity cases the family has been regarded as a unit, but strictly as an economic rather than as a domestic unit. A man living alone in a shanty or in a single room has been regarded as constituting a family of one, even though he has children living. Where a husband is serving a term in jail and the wife is left to take care of herself and several children, the family is regarded as consisting of the wife and children, and the husband is not included in the enumeration. In dealing with the subjects of delinquencies and of causes, however, it has often been found necessary to look outside the economic group.

Of the 1,256 families for which the records showed that material relief was given in 1905, 73 have not been considered in this article. In a number of cases it was impossible to determine the composition of the family in 1905. In such cases the record extended over a number of years, but the changes that came with the years were not fully recorded. In other cases, because of a rush of applications, aid was given without any investigation at all. In a few instances the records were too meager to serve the purposes of this study. There remained for consideration the charity records of 1,183 families, 452 of these being white families and 731 colored.

The nativity of the recipients is shown in the following table. It is seen that nearly all who were assisted were Americans. Only 40 families, or 3.4 per cent of the total, were of wholly foreign extraction. This element is so small as to be without special significance, yet it is noticeable that whereas the foreign population of the city is about 7 per cent of the total population foreign charity recipients constitute a percentage only about half as great. When the number of white families is compared with the number of Negro families it is found that the former comprise 38.2 per cent and the latter 61.8 per cent of all the families receiving aid. In 1900 the white population of the District was 68.7 per cent and the Negro population was 31.1 per cent of the whole population.

**NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY
NATIVITY OF HEAD OF FAMILY.**

Nativity of—		Number of families.	Nativity of—		Number of families.
Husband or male head of family.	Wife or female head of family.		Husband or male head of family.	Wife or female head of family.	
WHITE.			WHITE—conc'd.		
United States.....	United States.....	a236	Poland.....	Poland.....	1
United States.....	United States.....	b20	Russia.....	.....	1
.....	United States.....	c142	Scotland.....	.....	1
United States.....	England.....	1	Turkey.....	United States.....	1
United States.....	Germany.....	2	.....	England.....	1
United States.....	Ireland.....	2	.....	France.....	1
United States.....	Italy.....	1	.....	Germany.....	1
United States.....	Scotland.....	1	.....	Ireland.....	2
United States.....	Sweden.....	1	.....	(1)	2
Austria.....	Austria.....	1	Total white.....	.....	452
Denmark.....	Denmark.....	1	NEGRO.		
Denmark.....	Sweden.....	1	United States.....	United States.....	293
England.....	Germany.....	2	United States.....	.....	45
England.....	Ireland.....	1	.....	United States.....	390
France.....	France.....	1	.....	Bahama Islands.....	1
France.....	.....	2	.....	Germany.....	1
France.....	United States.....	1	West Indies.....	United States.....	1
Germany.....	Germany.....	2	Total Negro.....	.....	724
Germany.....	Poland.....	7	Grand total.....	.....	1,183
Germany.....	.....	1	.....	.....	.....
Hungary.....	.....	1	.....	.....	.....
Ireland.....	United States.....	4	.....	.....	.....
Ireland.....	Ireland.....	3	.....	.....	.....
Italy.....	Italy.....	1	.....	.....	.....
Italy.....	.....	1	.....	.....	.....
Norway.....	United States.....	1	.....	.....	.....

a Including 2 families in which the husband is white and the wife colored.

b Comprising 4 widowers, 13 single men, 2 separated men, and 1 man conjugal condition not reported.

c Comprising 83 widows, 34 separated women, 17 single women, 2 divorced women, 5 married women whose husbands were not at home, and 1 woman conjugal condition not reported.

* Widower.

* Single man.

/ Separated man.

* Wife a Negress.

* Comprising 1 widow and 1 woman whose husband was in jail.

/ Separated woman.

/ Comprising 2 widows and 2 separated women.

* Single women.

* Nativity not reported.

* Comprising 1 widow and 1 separated woman.

* Comprising 24 widowers, 5 men conjugal condition not reported, 4 separated men, 10 single men, and 2 married men whose wives were not at home.

* Comprising 215 widows, 90 separated women, 64 single women, 13 married women whose husbands were not at home, 2 divorced women, and 6 women conjugal condition not reported.

* Widow.

The number of persons in the 1,183 families receiving material aid from the Associated Charities in 1905 was 4,365. Of these 1,860 were white persons and 2,505 were colored persons. If the 73 families which were eliminated on account of imperfect records had been included the total number of persons would have approximated 5,000. The number receiving material aid, however, by no means fully measures the work of the organization in Washington. In addition there are thousands who are assisted by the organization but who do not actually receive money, food, or clothing. A very large number of applicants desire free medical treatment, and this they receive at

public dispensaries upon the recommendation of the charity agents. A great many seek employment and the charity agents find work for them. Some who seek material aid are shown a way by which they may help themselves and thus avoid being enrolled as objects of charity. It is probable, taking the official reports of the association as a guide in making an estimate, that 15,000 persons per annum are affected in one way or another by the work of this organization.

The 4,365 recipients of material aid, it should be clearly understood, are for the most part the floating, unattached poor. In a very true sense they are the derelicts of society. The ties that morally bind the individual to society have been in a large degree severed. They rarely belong to a union or to a lodge; they have no friends or relatives to whom they can turn for help; they have no church connections. Industrially and socially they are without moorings, and when the hour of distress overtakes them they drift to the charity office, because they have nowhere else to go.

The isolation of this class of charity recipients is brought out when the subject of the membership of the wage-earners in labor organizations and in fraternal and beneficial associations is considered. The records are not entirely satisfactory, though efforts are made to secure as much information as possible about the lodges and societies to which the applicants belong. In nineteen cases out of twenty there is nothing to learn. Of 1,775 wage-earners only 81 made any statement as to whether they belonged to labor organizations, and of these only 23 stated that they were members of such organizations. In only 40 families was there evidence of membership in fraternal or beneficial societies. The reason for not belonging to labor organizations and the result of nonmembership appear frequently in notes and comments of the agent like the following:

"He (the wage-earner) does not belong to the union, and for that reason finds it difficult to get work."

"The husband said he thought X could get him work to do if he (X) cared to do so, but the husband does not belong to a union and X does." (Here X was the father-in-law of the applicant.)

"Man (a carpenter) had gone to a job of work but when the other workmen found he was a nonunion man, they objected. Man made inquiry about union and found he would have to pay \$10 to join. This he could not do."

In the table which follows is shown the size of the families receiving relief. The average is 3.7 persons for each family. In 1900 the average size of the family in the District of Columbia was 4.9 persons. The charity family is therefore considerably smaller than the normal family. The lower average of the charity family is due to the fact that among the very poor there is an unusually large num-

ber of families consisting of but one or two persons. The father or the mother, or both father and mother, either childless or forsaken by their children, live alone until old age comes on and the earnings become so scant that resort must be made to charity. The table shows that nearly 40 per cent of the families receiving aid were families of one or two persons. In the District of Columbia in 1900 not quite 20 per cent of the whole number of families belonged to this class. If the families consisting of one and of two persons are excluded, the average number of persons in the charity family is increased to 5, which is about normal. The figures bearing upon the size of the family, therefore, contain nothing of great significance. The poverty-stricken family on the average is about the same size as the prosperous family.

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY SIZE OF FAMILY.

Size of family.	White.		Negro.		Total.	
	Families.	Persons.	Families.	Persons.	Families.	Persons.
One person.....	67	67	156	156	223	223
Two persons.....	71	^a 142	145	^b 290	216	432
Three persons.....	50	^c 168	139	^d 417	189	585
Four persons.....	72	258	88	352	160	640
Five persons.....	50	^e 260	67	^f 335	122	615
Six persons.....	53	343	67	402	122	750
Seven persons.....	34	238	29	203	63	441
Eight persons.....	22	176	23	184	45	60
Nine persons.....	8	72	9	81	17	353
Ten persons.....	7	70	6	60	13	130
Eleven persons.....	7	11	1	11	2	122
Fourteen persons.....	1		1	14	1	14
Total.....	452	^a 1,860	731	^f 2,505	1,183	4,365

- ^a Including 1 Negro, member of white family.
- ^b Not including 1 Negro, member of white family.
- ^c Including 4 Negroes, members of white families.
- ^d Not including 4 Negroes, members of white families.
- ^e Including 9 Negroes, members of white families.
- ^f Not including 9 Negroes, members of white families.

AGE AND CONJUGAL CONDITION.

The following table shows the leading facts in respect to the ages of the charity recipients and to the conjugal conditions which prevailed among them. When collecting facts with respect to age the charity agent meets with the same difficulties that perplex the census agent. The ages, particularly of children, are often not known and ages of very old people must frequently be guessed. Still, taken all in all, the age records, especially those of children, are full and fairly satisfactory.

NUMBER OF WHITE AND OF NEGRO PERSONS OF EACH SEX RECEIVING AID IN 1905, BY CONJUGAL CONDITION AND AGE PERIODS.

Conjugal condition and age period.	White.			Negro.			Total.		
	Male.	Fe- male.	Sex not re- ported.	Male.	Fe- male.	Sex not re- ported.	Male.	Fe- male.	Sex not re- ported.
Single:									
Under 10 years.....	253	267	76	291	365	95	544	632	171
10 or under 16 years.....	162	162	11	159	229	12	321	391	23
16 years or over.....	91	93	1	98	187	.....	189	280	1
Age not reported.....	10	10	8	13	35	9	23	45	17
Total.....	516	532	96	561	816	116	1,077	1,348	212
Married:									
16 years or over.....	274	281	.....	302	316	.....	576	597	.....
Separated (deserted):									
16 years or over.....	3	39	.....	4	97	.....	7	136	.....
Age not reported.....	.....	.....	.....	.....	1	.....	.....	1	.....
Total.....	3	39	.....	4	98	.....	7	137	.....
Widowed:									
16 years or over.....	7	102	.....	26	236	.....	33	338	.....
Age not reported.....	.....	.....	.....	.....	2	.....	.....	2	.....
Total.....	7	102	.....	26	238	.....	33	340	.....
Divorced:									
16 years or over.....	1	3	.....	.....	2	.....	1	5	.....
Conjugal condition not reported:									
16 years or over.....	3	3	.....	7	10	.....	10	13	.....
Age not reported.....	.....	.....	.....	1	2	6	1	2	6
Total.....	3	3	.....	8	12	6	11	15	6
Grand total.....	804	960	96	901	1,482	122	1,705	2,442	218

An analysis of the age periods brings out the fact that there is a much larger percentage of children under the age of 16 in the charity population than there is in the population at large. In 1900, 26.6 per cent of the entire population of the District of Columbia was under the age of 16, while in the charity population studied 47.7 per cent was under the age of 16. Analysis further shows that the percentage of children under 10 years of age was 30.9 per cent in the charity families, while the percentage of children under 10 in the entire District was only 16.8 per cent of the total population. Young children, therefore, are relatively very numerous among charity dependents in the District of Columbia, a fact of considerable significance. In families where there are many small children much of the time and energy that might be given to breadwinning is of necessity given to the care of the children. In some of the families a care taker—usually an old woman who could do nothing else—was provided for the children and all the older persons were thus permitted to go out and earn something.

Not only do children under 10 years of age predominate in these families, but the female children are proportionally more numerous.

than they are in the average family. In 1900 in the District of Columbia the number of males under 16 years of age was 36,517, and the number of females 37,683, the excess of females over males being 3.2 per cent. A comparison of the figures given in the preceding table shows that the females under 16 years of age are in excess of the males by 18.3 per cent. If comparison is made only for the children of 10 or under 16 years it is found that in the District the excess of females over males is 8.1 per cent, whereas in the charity population the excess is 21.8 per cent. In whatever way they are considered the figures point to a large proportion of girls in the charity families. In so far, then, as the boy is a better wage-earner than the girl, so far this excess of female children must be regarded as a handicap in the struggle for subsistence. Not the actual number of children in these families, but the sex of the children is significant.

In respect to the conjugal conditions prevailing among these charity recipients the table gives information regarding separation (desertion), widowhood, and divorce. It is seen that in the 1,183 families there were 144 deserted persons. In 137 of these cases the wife was reported as having been deserted and in 7 cases the husband was deserted. If only those cases are considered in which abandonment was possible, that is, those in which both husband and wife were living, this matter of desertion may be brought out more plainly. There were in all 736 families in which both husband and wife were living, and in these, as above stated, there were 144 cases of desertion, or 19.6 per cent. Among the Negroes desertion was much more frequent than among the whites. In the 322 white families which had both husband and wife living there were 42 cases of desertion, or 13.0 per cent; in the 414 Negro families of this class there were 102 cases of desertion, or 24.4 per cent.

The number of families in which either the husband or the wife was dead is also strikingly large, nearly 30 per cent of all the families belonging to this class. Of the 452 white families receiving aid 6 had widowers and 89 had widows at the head. Of the 731 colored families 24 had widowers and 218 had widows at the head. In these families there were 923 persons, 256 whites and 667 colored.

The figures show that the charity family is very often the fatherless family. There were 307 families in which the husband was dead. Including with these the 137 families that were abandoned by the husband it is found that 444 families, or 37.5 per cent of the total, were without male supporters at their head.

Divorce among the charity families played practically no part at all, there being only 6 divorced people among 4,365. This paucity of divorce cases is easily explained. The very poor can not afford divorcement. Separation is the cheap substitute for divorce.

OCCUPATIONS.

A study of the occupations of the charity recipients shows that they are by no means an idle or nonwage-earning class. Of the 2,186 persons reported as being 16 years of age or over, 1,687, or 77.2 per cent, were engaged in some kind of gainful occupation. Of those over 16 who had no gainful occupation the greater part consisted of old people and of women who as wives spent their time in housework. The number of families in which both husband and wife were gainfully employed was very large. Of the 271 white families in which there were both a husband and a wife living at home there were 95 in which both the husband and wife were gainfully employed, while of the 291 colored families having both husband and wife living at home there were 222 in which both the husband and the wife were gainfully employed. In respect to the employment of married women the broad facts of the charity world resemble the broad facts of the world at large. The white married woman does not expect to work as a wage-earner, while marriage has little effect in reducing the number of Negro women at work. Extreme poverty, however, drives many white married women into the ranks of wage-earners, for the percentage of white wives with occupations in the charity families is much greater than the percentage of white married women gainfully employed in the District at large.

Among the children of the charity recipients 88, or 12 per cent, of those 10 or under 16 years of age were gainfully employed. In 1900 of 27,319 children in the District of Columbia from 10 to 15 years of age, 2,144, or 7.8 per cent, were reported as engaged in gainful occupations.^(a) Thus child labor among the charity recipients is seen to be a considerably greater factor than it is among the people at large. But the statements of the charity records bearing on this topic do not tell the whole story. They show merely the number of children who were employed for a definite wage, whereas hundreds of children in the families receiving charity helped their mothers to do the washing and ironing which was so often the chief source of income; these have not been included in the enumeration here given, yet plainly they were engaged in gainful occupations.

The occupations of the chief wage-earners and of other wage-earners in the families receiving charity relief and the number of persons engaged in each occupation are shown in the two tables which follow:

^a See Bulletin of the Bureau of the Census, No. 68, p. 5.

NUMBER OF CHIEF WAGE-EARNERS IN WHITE AND IN NEGRO FAMILIES RECEIVING AID IN 1905, BY OCCUPATION, SEX, AND REGULARITY OF EMPLOYMENT AT NORMAL TIMES.

Occupation and sex.	White.				Negro.				Total.			
	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.
MALES.												
Art critic		1		1					1			1
Artists		2		2					2			2
Ash man					1			1	1			1
Bakers	1	2		3					1			1
Barbers					1	2	1	4	2		1	3
Blacksmiths		1		1	1			1	1			2
Boatmen	1	1		2					1	1		2
Bookkeeper	1			1					1			1
Brewers	1	1		2					1			1
Bricklayers		5		5		2		2				2
Butchers		2		2					2			2
Carpenters		26		26		1		1	27			27
Caterer					1			1				1
Cement worker							1	1			1	1
Cigar maker		1		1					1			1
Chair caner						1		1				1
Clergymen		1		1		2		2				2
Clerks	6	2	1	9					3			3
Clothing cleaners		1		1		1		1	6		1	7
Compositors		5		5					2			2
Conductors	2			2					5			5
Cooks		1		1	3	4		7	2			8
Coopers		2		2					5			5
Electrician		1		1					2			2
Engineers		3		3	1	1		2	1	4		5
Expressmen	1	1		2		5		5	1	6		7
Foreman of laborers						1		1				1
Gardeners		1		1					1			1
Government clerk		1		1		1		1	2			2
Government employee	1	1		2					1			1
Herb doctor		1		1								
Hod carriers						8	1	9	8	1		9
Horse trader		1		1					1			1
Hostlers					1	1		2	1			2
Hucksters		12		12		2		2	14			14
Inspectors of lumber		1	1	2					1		1	2
Ironworkers	1	6		7					6			6
Janitors	2			2	2	1	1	4	4		1	5
Jobbers		3	1	4		7		7	10		1	11
Junk dealers						6		6	6			6
Laborers	13	83	1	97	16	183	7	206	29	266	8	303
Machinists		2		2					2			2
Marble worker		1		1					1			1
Mechanic		1		1					1			1
Merchants		2		2					2			2
Metal worker		1		1					1			1
Missionary						1		1				1
Motormen	5			5					5			5
Musicians						2		2				2
Newspaper work		1		1					2			2
Oyster shucker	1			1					1			1
Painters	1	23	1	25					23		1	25
Paper hangers		3		3		1		1	4			4
Peddlers		1		1		1		1	2			2
Physicians		1	1	2					1		1	2
Plasterers		5		5		5		5	10			10
Plumbers		4		4					4			4
Rag pickers						2		2	2			2
Railroad employee	1			1					1			1
Sailors		2		2					2			2
Salesman		1		1					1			1
Sawyer	1			1					1			1
Scullion						1		1	1			1
Sexton					1			1	1			1
Shoemakers		2		2		3		3	5			5
Steam fitter		1		1					1			1
Stonebreaker						1		1	1			1
Stonecutters		2		2					2			2
Stone mason	1			1					1			1

NUMBER OF CHIEF WAGE-EARNERS IN WHITE AND IN NEGRO FAMILIES RECEIVING AID IN 1905—Concluded.

Occupation and sex.	White.				Negro.				Total.			
	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.	Regu- lar.	Irregu- lar.	Regu- larity not re- port- ed.	To- tal.
MALES—concluded.												
Street sweeper.....			1	1							1	1
Tailors.....		1	1	2							1	2
Teamsters.....	4	7		11	9	18	2	29	13	25	2	40
Tinsmiths.....		5		5						5		5
Traveling salesman.....		1		1						1		1
Typewriter.....		1		1						1		1
Waiters.....		1		1	2	6		8	2	7		9
Watchmen.....	4	3	1	8					4	3	1	8
Occupation not reported...	1	1	4	6		1	4	5	1	2	8	11
Total males.....	49	241	13	303	38	272	17	327	87	513	30	630
FEMALES.												
Boarding-house keeper.....						1		1		1		1
Canvasser.....		1		1						1		1
Cash girl.....	1			1					1			1
Caterer.....							1	1			1	1
Charwomen.....	5	3		8	1			1	6	3		9
Clerks.....	1	1	1	3					1	1	1	3
Cooks.....			1	1		1		1		1		2
Domestics.....	4	^a 34		38	11	^b 156	6	173	15	190	6	211
Dressmaker.....		1		1						1		1
Factory operators.....	1			1	1			1	2			2
Folder, printing office.....		1		1						1		1
Laborer.....		1		1								1
Laundresses.....	1	15		16	13	134	6	153	14	149	6	169
Milliner.....	1			1					1			1
Nurses.....		5		5		5		5		10		10
Seamstresses.....	4	33		37		11		11	4	44		48
Telephone girl.....			1	1							1	1
Waitresses.....	1	1		2					1	1		2
Occupation not reported.....			1	1		2	5	7		2	6	8
Total females.....	19	^a 96	4	119	26	^b 310	18	354	45	406	22	473
Total, both sexes.....	68	^a 337	17	422	64	^b 582	35	681	132	919	52	1,103
Families for which no chief wage-earner was reported.....				30				50				80
Total families.....				452				731				1,183

^a Including 1 Negro woman, chief wage-earner in a white family.^b Not including 1 Negro woman, chief wage-earner in a white family.

**NUMBER OF WAGE-EARNERS OTHER THAN CHIEF WAGE-EARNERS IN WHITE
AND IN NEGRO FAMILIES RECEIVING AID IN 1905, BY SEX AND OCCUPATION.**

Occupation.	White.	Negro.	Total.	Occupation.	White.	Negro.	Total.
MALES.				FEMALES.			
Apprentice.....	1		1	Agent.....	1		1
Attendants at club.....	2		2	Art work.....	1		1
Barber.....		1	1	Bookkeeper.....	1		1
Bather's helper.....		1	1	Bundle wrapper.....	1		1
Bootblack.....		1	1	Canvassers.....	2		2
Chair caner.....		1	1	Charwoman.....	1		1
Clerks.....	8		8	Clerks.....	14		14
Domestics.....		2	2	Domestics.....	a 56	b 166	222
Driver.....		1	1	Dressmaker.....	1		1
Dyer and cleaner.....		1	1	Errand girl.....	1		1
Errand boys.....	8		8	Factory operatives.....	2		2
Jobbing.....	18	26	39	Governess.....	1		1
Laborers.....	19	19	38	Government employee.....	1		1
Messengers.....	5	2	7	Jobbing.....	3		3
Musician.....		1	1	Laundresses.....	26	139	165
Naval employee.....				Messenger.....	1		1
Newsboys.....	4	5	9	Musician.....		1	1
Painters.....	2		2	Nurses.....	3	7	10
Painter's apprentice.....	1		1	Paper-mill operatives.....	1	1	2
Plumber's apprentice.....	1		1	Rents rooms.....	1		1
Porter.....		1	1	Seamstresses.....	32	7	39
Teamsters.....	3	12	15	Stenographer.....	1		1
Not reported.....	6	9	15	Telephone operators.....	2		2
Total males.....	74	84	158	Waitresses.....	2		2
				Not reported.....	13	25	38
				Total females.....	168	346	514
				Grand total.....	a 242	b 430	672

^a Including 2 Negroes, members of white families.

^b Not including 2 Negroes, members of white families.

These occupations represent almost every ordinary vocation. In the same list with laborers and domestics are art critics, musicians, physicians, missionaries, newspaper men, and clergymen. A couple, who in their younger days had kept at their own expense what was known as a "Tramps' Rest," where penniless wayfarers might receive food, raiment, and shelter, were in their old age compelled to become the objects of charity.

Although the list of occupations is long the distress was confined to a very few classes of people. The occupations of more than 60 per cent of the chief wage-earners were those of laborers, laundresses, and domestics, while among others than chief wage-earners these three classes formed 64 per cent of the whole. This was a result to be expected, for Washington on its industrial side is above all places a city of laborers, laundresses, and domestics.^a While this is true the table shows a number of charity recipients from the organized and well-paid trades. Twenty-seven carpenters, 25 painters, 10 plasterers, 9 clerks, 7 ironworkers, 5 shoemakers, and 4 plumbers were chief wage-earners in families that were driven to charity.

EARNINGS OF CHARITY RECIPIENTS.

The subject of the earnings of charity recipients is one of the most important connected with the subject of poverty and at the same time one of the most difficult to treat satisfactorily. When a family

^a See Bulletin of the Bureau of Labor, No. 67, pp. 782-784.

applies for aid the earnings are inquired into at the outset. The inquiry as to the amount and source of income is painstaking and thorough, for aid must be given or withheld on the basis of the family income; yet the facts obtained by the inquiry are in most cases such as can not be conveniently tabulated. The period of charity seeking is a period when earnings are either irregular or abnormally low or when there are no earnings at all.

The following table gives the number of families in which the earnings of the chief breadwinner were normal at the time of the first application in 1905, the number in which the earnings were less than normal, and the number in which the chief wage-earner was earning nothing at all:

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905 IN WHICH THE EARNINGS OF THE CHIEF WAGE-EARNER WERE NORMAL, LESS THAN NORMAL, OR NOTHING, BY SEX OF CHIEF WAGE-EARNER.

[This table does not include 80 families for which no chief wage-earner was reported.]

Earnings.	White families in which chief wage-earner was—		Negro families in which chief wage-earner was—		All families in which chief wage-earner was—		Total families reporting chief wage-earners.
	Male.	Female.	Male.	Female.	Male.	Female.	
Normal.....	24	14	17	23	41	37	78
Less than normal.....	1	1	1	3	2	4	6
Nothing.....	243	76	260	220	503	296	799
Not reported.....	35	28	48	109	83	137	220
Total.....	308	119	326	355	629	474	1,103

* Including 1 Negro woman, chief wage-earner in a white family.

† Not including 1 Negro woman, chief wage-earner in a white family.

The above table shows 220 cases as not reported. This does not mean that the records in these cases give no facts at all bearing upon the earnings of the chief wage-earner. It means that while the records give some kind of an account of the earnings they do not state their exact amount. For example, the record may say that the husband, a laborer, was at work with a construction company, but may say nothing whatever about the amount of his earnings. In this case it was certain that there were earnings, but it could not be determined whether they were normal or less than normal. Such a case, therefore, had to be classified in the tables "not reported."

The most significant item in the table is the one showing the number of families in which the chief wage-earner at the time of application was earning nothing. In more than two-thirds of the families the wages of the chief wage-earner had entirely ceased. If the 80 families in which there was no chief wage-earner at all are included, the proportion of families deprived of a regular breadwinner at the time of application was three-fourths of the whole number of families relieved. In the majority of cases distress was contemporaneous with the cessation of the earnings of the chief breadwinner, a fact which indicates *prima facie*, at least, that the

poverty of these poor is not chiefly a moral problem, but is chiefly an economic or financial problem.

The rates of wages of the 78 chief wage-earners whose wages at the time of application were normal are shown in the following table. This table, like all tables which give merely the rates of wages, shows very little about the living conditions of these families. It is not the wages that a person earns in a day or in a week, or even in a month, that throws light upon living conditions. In order to determine standards of living from earnings it is necessary to ascertain the earnings for a long period of time. An examination of the table produces at least one result, although a negative one; it causes little or no surprise that these families should have applied for charity even though the earnings at the time of application were flowing in regularly.

CHIEF WAGE-EARNERS PAID BY THE DAY, BY THE WEEK, AND BY THE MONTH, WHOSE EARNINGS WERE NORMAL AT THE TIME OF APPLICATION, BY REGULARITY OF EMPLOYMENT AND SIZE OF FAMILY.

Normal earnings.	Chief wage-earners.				Persons in family.	Normal earnings.	Chief wage-earners.				Persons in family.
	Employment, regular.		Employment, irregular.				Employment, regular.		Employment, irregular.		
	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	
WHITE.						NEGRO.					
\$0.20 per day		1			4	\$1.00 per day	1				1
\$1.00 per day	1				7	\$1.25 per day	1				6
\$1.03 per day			1		11	\$1.50 per day	1				3
\$1.50 per day	1				6	\$1.75 per day	1				2
\$1.50 per day	1				9	\$2.00 per day	1				3
\$1.65 per day	1				9	\$0.50 per week			1		2
\$2.00 per day	1				6	\$0.75 per week		1			4
\$1.25 per week		1			1	\$1.25 per week			1		4
\$1.35 per week		1			1	\$1.25 per week	1				5
\$2.00 per week		1			6	\$1.50 per week	1				3
\$2.50 per week		1			2	\$1.50 per week			1		5
\$3.00 per week	2				2	\$1.50 per week			1		8
\$3.00 per week		1			3	\$1.75 per week		1			4
\$3.00 per week	1				5	\$2.00 per week			1		2
\$3.50 per week		1			5	\$2.00 per week		2			4
\$4.00 per week		1			4	\$2.00 per week	1				8
\$4.00 per week	1				5	\$2.50 per week	1				4
\$4.00 per week	1				6	\$2.50 per week			1		5
\$5.00 per week	1				2	\$2.75 per week		1			5
\$5.00 per week	1				6	\$3.00 per week			1		3
\$5.00 per week			1		7	\$3.00 per week			1		4
\$5.25 per week	1				3	\$3.00 per week	1				7
\$6.50 per week	1				5	\$3.00 per week		1			5
\$9.00 per week		1			5	\$4.00 per week	1				8
\$9.00 per week	1				6	\$4.00 per week	1				7
\$9.00 per week	1				7	\$5.00 per week	1				8
\$9.00 per week	1				8	\$6.00 per week	1				6
\$10.00 per month			1		3	\$7.50 per week	1				5
\$15.00 per month	1				5	\$7.50 per week	1				9
\$20.00 per month		1			3	\$8.00 per week			1		10
\$20.00 per month		1			4	\$9.00 per week			1		3
\$25.00 per month		1			4	\$9.00 per week	1				7
\$25.00 per month		1			7	\$2.00 per month			1		4
\$30.00 per month (b)				1	4	\$10.00 per month		1			5
\$40.00 per month	1				10	\$12.00 per month		1			2
\$55.00 per month	1				6	\$12.00 per month		2			3
\$75.00 per month	1				6	\$20.00 per month	1				4
						\$40.00 per month	1				8
Total.....	21	13	3	1	.....	Total.....	15	14	2	9	.....

* Not reported whether regular or irregular.

* \$18.00 at time of application.

In the following table are shown the normal daily earnings of the chief wage-earner in those families where the normal rate of wage was in some form or other stated in the record, whether the normal rate was received at time of application or not. This table, like the one preceding it, fails to give a picture of the 269 families to which it relates. Before any comparison can be made, it is necessary to know how much money each family received in a year. Nevertheless the table has one feature that is worthy of notice. In over two-fifths of these families the chief wage-earner was a male working at a normal wage ranging from \$1 to \$2 per day, the wage most often not exceeding \$1.50 a day. Nearly all of these wage-earners were day laborers—men with the pick and shovel. Some of them were working for the city, digging the sewers and mains, and sweeping the streets.

NORMAL DAILY EARNINGS OF CHIEF WAGE-EARNERS, BY SEX AND SIZE OF FAMILY.

Chief wage-earners in—				Per- sons in family.	Earnings per day. (a)	Chief wage-earners in—				Per- sons in family.	Earnings per day. (a)
White families.		Negro families.				White families.		Negro families.			
Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.		
			1	1	\$0.08	2			2	2	\$0.50
			1	2	.08		2		1	3	.60
			1	4	.08		1		5	4	.60
			1	4	.13	1	1	1	1	5	.50
			1	1	.19				1	7	.60
			1	4	.20			1		2	.58
			1	1	.21	2	1			5	.58
			1	3	.21			1	1	6	.58
			1	4	.21			1		3	.60
			1	5	.21			2		6	.62
			1	1	.23		1			3	.63
			1	1	.25			1		1	.67
			1	2	.25	1	1	1		2	.67
			3	3	.25		1	1		3	.67
			1	4	.25		1			4	.67
			1	5	.25			1		5	.67
			1	3	.29	1				6	.67
			1	4	.29			1		7	.67
			1	6	.29			1		8	.67
		1		2	.31			1		8	.67
			1	4	.31				1	3	.75
	1			1	.33		1	1		4	.75
	1		1	2	.33					3	.77
			1	3	.33	1	2	1		4	.77
			3	4	.33	1				2	.83
	2			6	.33					3	.83
			1	8	.33					4	.83
			1	3	.35	1			1	5	.83
	1		2	2	.38	1				6	.83
			3	3	.38	1		1		7	.83
			2	5	.38	1				8	.83
			2	1	.42	1				3	.88
	1		1	2	.42		1			4	.96
			1	3	.42		1			7	.96
			1	4	.42		1		3	2	1.00
			1	5	.42	1			1	3	1.00
			2	2	.46	2		2		4	1.00
			2	3	.46			4		5	1.00
			1	5	.46			3		6	1.00
			1	6	.46	1	1			7	1.00

* Earnings per day shown in this column are computed in some cases by dividing weekly earnings by 6 and in other cases by dividing monthly earnings by 26.

* And board.

NORMAL DAILY EARNINGS OF CHIEF WAGE-EARNERS, BY SEX AND SIZE OF FAMILY—Concluded.

Chief wage-earners in—				Per- sons in family.	Earnings per day. (a)	Chief wage-earners in—				Per- sons in family.	Earnings per day. (a)
White families.		Negro families.				White families.		Negro families.			
Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.		
		1		2	\$1.08			3		2	\$1.75
1				5	1.08	1				3	1.75
		1		5	1.10			1		7	1.75
	1			4	1.15	1				6	1.83
1				5	1.15	1				7	1.85
		1		6	1.16	1				6	1.92
1	1	1		5	1.17			1		2	2.00
1				6	1.17	1		1		3	2.00
1				2	1.25	2				5	2.00
		1		3	1.25	2		1		6	2.00
1				4	1.25	1				7	2.00
2		3		5	1.25	2		1		8	2.00
		1		6	1.25	1				6	2.12
1		1		7	1.25	1				7	2.31
1				8	1.25	1				10	2.31
		1		9	1.25	3				2	2.50
1				3	1.33	1				4	2.50
	1			5	1.33	1				5	2.50
		1		10	1.33	3		1		6	2.50
		1		2	1.35					8	2.50
		1		4	1.35			1		5	2.75
1				1	1.50	1				6	2.88
		2		2	1.50	2				4	3.00
1		3		3	1.50	1				5	3.00
5		5		4	1.50	1				6	3.00
3	1	2		5	1.50	1				8	3.00
5		3		6	1.50			1		11	3.00
4		2	1	7	1.50					3	3.20
3		2		8	1.50	1				4	3.50
1		1		9	1.50	1				5	3.50
		3		10	1.50	1				2	4.00
1				8	1.52	1				4	4.00
1		1		2	1.54	1				5	4.00
				8	1.54	1				6	4.00
1		1		10	1.54	1				7	4.00
1				9	1.65	1				4	4.17
1				2	1.67	1				4	5.00
1				4	1.67	1				5	5.00
1				5	1.67	1				10	5.00
1				9	1.67						

* Earnings per day shown in this column are computed in some cases by dividing weekly earnings by 6 and in other cases by dividing monthly earnings by 26.

In 206 of the families there was evidence of a normal income additional to that derived from the labor of wage-earners. In many cases the reports told of assistance given by neighbors, in other cases the family could rely upon regular donations from a church, occasionally an absent child or a near relative would regularly pay the rent; upon the whole, however, assistance by relatives and kinsmen was rare—not so frequent perhaps as assistance by friends. In 43 families a monthly pension supplemented the regular earnings. These pensions ranged from \$8 to \$12 a month and were in a few cases practically the sole income of the recipient. With the exception of the pensions the element of additional income constituted but an insignificant factor in the finances of the families. In a great majority of cases when the regular earnings of members of the family were cut off practically everything was gone.

FAMILIES HAVING ADDITIONAL INCOME (OR HELP), AT NORMAL TIMES AND AT TIME OF APPLICATION.

Class.	At normal times.			At time of application.		
	White.	Negro.	Total.	White.	Negro.	Total.
Total families having some income in addition to earnings.....	91	115	206	99	124	223
Families (included in above) having pensions.....	29	14	43	29	14	43

KIND OF AID GIVEN.

The following table, showing the kind of aid received by these families, gives an insight into the pressing needs of the distressed poor:

FAMILIES RECEIVING AID IN 1905, BY KIND OF AID FIRST GIVEN.

Kind of aid first given.	Families.		
	White.	Negro.	Total.
Cash.....	1	1	2
Clothing.....	68	57	125
Clothing and food.....	5	13	18
Clothing and fuel.....	7	4	11
Clothing, food, and fuel.....	3	2	5
Food.....	175	270	445
Food and cash for rent.....	1		1
Food and lodging.....	1		1
Food and fuel.....	71	164	235
Food, fuel, and rent.....	1		1
Fuel.....	98	204	302
Medicine.....	1		1
Rent.....	8	4	12
Sanitarium treatment.....	1		1
Supplies.....		1	1
Transportation.....	9	8	17
Transportation and rent.....	1		1
Not reported.....	1	3	4
Total.....	452	731	1,183

This table shows that lack of food was the most potent factor in driving people to seek charity. In 60 per cent of all the cases tabulated food constituted either the whole or a part of the donation. Next to food, fuel is most frequently sought by charity applicants. In nearly half the cases of relief given in 1905 fuel was one of the articles first given. Frequently recourse is made to charity because the usual supply of fuel is cut off by severe weather. Many very poor families are accustomed to get their fuel in a haphazard way, picking coal and cinders from public dumps and private ash heaps and gathering stray pieces of wood here and there.^a The charity records bring out this fact. In 40 families it was the custom to gather fuel wherever it could be secured for nothing, and in a number of cases

^a See Bulletin of the Bureau of Labor, No. 64, p. 610.

distress was due to the fact that cinders could not be picked from the dump because of the ice and snow.

After food and fuel, clothing is most frequently given. A word of explanation about the frequent giving of clothing is necessary. In a great many instances the clothing consisted of shoes given to children in order that bare feet might not prevent attendance at school. Cases happen where a family that can afford most things can not buy shoes for the children, and without shoes the children can not attend school. In such a case the charity organization comes to the relief of the family and gives the necessary shoes, even though there be no acute distress. This policy, with respect to the giving of shoes to enable children to attend school, materially increases the number of times clothing is given and adds to the charity roll quite a number of families who ordinarily would not belong there.

The number of times rent appears in the table by no means measures the distress that is connected with the arrears of rent. Next to the food problem the rent problem is unquestionably the one that presses most heavily upon the poor. The charity reports give many instances of arrears of rent. Notices of ejectionment, costing the tenant \$1.85 for service, are constantly appearing. Sometimes a letter from the landlord appears, as follows: "You have six days from the 25th of this month, which was last Tuesday, the day that judgment was rendered against you, to vacate the room you occupy. The constable will be there when the six days are out if you are not by that time removed." The records show that the constable knows how to fulfill his duty. The following are from the charity agents' reports:

"Yesterday woman and her children were set out of doors. All slept on the porch last night."

"Put out on street on a rainy day."

"Put out on street in spite of agent's protest."

"The rent not having been paid, the family were set out in the midst of a heavy snowstorm."

The records, however, do not always show the landlord to be cruel and hard-hearted. "I have given," says a landlord in a letter to the agent, "notice to Mrs. X to move. I wish it could be accomplished in such a way as to avoid the publicity which might hinder her from getting another house." In this note can be seen the real nature of the hardship of being turned out of doors for nonpayment of rent. Ejectionment not only puts a family out on the street, but it also at the same time closes all doors against the family. No landlord wants a freshly ejected tenant. The poor know this and make every effort to avoid ejectionment. In the archives of poverty nothing is sadder than the accounts of the efforts that are made to meet the rent.

"Said that she had to pay her last cent to-day on her rent and was now out of food and fuel and would have to wait until she has another week's work before she could buy food and fuel."

"Sold feather bed and pillows for enough to pay the rent."

"Said she was going to pawn her skirt to pay for rent."

"They had just gotten enough money for rent and if they could keep that without paying anything for groceries they would be able to pay up rent on the following day."

In the above excerpts can be discerned the policy of the poor in respect to rent; they will pay the rent money even if it takes every cent they have to do so and they afterwards have to go to charity for food or for fuel. The serious results of ejection cause them to do this. This policy goes far in explaining why so few cases of assistance in rent appear in the table. There is another reason why the table does not show a larger number of rent cases: The charity organization does not make it a practice to pay the rent of applicants. Only in extreme cases will it undertake to furnish relief of this kind. An old woman on her deathbed had an ejection notice served on her. There was nothing to do but pay the rent. In such cases the charity organization will meet the arrears, but in ordinary cases it does not undertake to do this.

Since the 12 cases of rent relief found in the table on page 893 give no idea of the magnitude of the rent problem in the lives of these families, a separate study bearing on the subject was made, and the results embodied in the following table. In this table is given the number of families in which financial pressure, due to rent, figured either directly or indirectly in the distress:

NUMBER OF WHITE AND NEGRO FAMILIES HAVING ARREARS OF RENT AND CHATTEL-MORTGAGE LOANS, BY DESCRIPTION OF FAMILIES.

Description of family.	Number of families having—					
	Arrears of rent.			Chattel-mortgage loans.		
	White.	Negro.	Total.	White.	Negro.	Total.
Husband and wife	5	5	10			
Husband, wife, and 1 child	10	9	19		1	1
Husband, wife, and 2 children	18	2	20	1		1
Husband, wife, and 3 children	14	4	18	2		2
Husband, wife, and 4 children	18	7	25	3	2	5
Husband, wife, and 5 children	10		10			
Husband, wife, and 6 children	6	7	13	1	1	2
Husband, wife, and 7 children	3	3	6	1		1
Husband, wife, and 8 children	3	1	4			
Husband, wife, 2 children, and sister-in-law	1		1			
Husband, wife, 3 children, and mother-in-law		1	1			
Husband, wife, 3 children, son, wife, and child		1	1			
Husband, wife, 6 children, and grandmother	1		1			
Husband (separated) and 3 children		1	1			
Widower	2	2	4			
Widower and 1 child		1	1		1	1
Widower and 4 children and grandmother		1	1			
Widower and 6 children and woman		1	1			
Man (single)	1		1			
Man (single) and mother	1		1	1		1
Man, woman, and 5 illegitimate children	1		1	1		1
Widow	1	7	8			
Widow and 1 child	3	5	8	2	1	3
Widow and 2 children	3	3	6			
Widow and 3 children		5	5			
Widow and 4 children	1	4	5	1		1

NUMBER OF WHITE AND NEGRO FAMILIES HAVING ARREARS OF RENT AND CHATTEL-MORTGAGE LOANS, BY DESCRIPTION OF FAMILIES—Concluded.

Description of family.	Number of families having—					
	Arrears of rent.			Chattel-mortgage loans.		
	White.	Negro.	Total.	White.	Negro.	Total.
Widow and 5 children.....	1	3	4		1	1
Widow and 6 children.....		1	1			
Widow and 7 children.....		1	1			
Widow and 4 children and dependent.....	1		1			
Widow, 1 child, and mother.....		1	1			
Wife (separated).....		1	1			
Wife (separated) and 1 child.....	4	1	5			
Wife (separated) and 2 children.....	2	4	6	1	2	3
Wife (separated) and 3 children.....	2	4	6			
Wife (separated) and 4 children.....	1		1	1		1
Wife (separated) and 5 children.....	1	3	4			
Wife (separated) and 6 children.....	1		1			
Woman (single).....		3	3			
Woman (single) and niece.....		1	1			
Woman (single) and 2 children.....				1	1	1
Woman (divorced).....						
Total.....	115	93	208	16	10	26

Of the 1,183 families, 208 at some time^a) and to some extent found arrears for rent associated with their appeal to charity. Nearly a third of the families thus distressed were fatherless; that is, they had as heads either widows or wives whose husbands had abandoned them.

Arrears of rent is the most frequent form of debt among these stricken by poverty, but there are other forms that are accompanied by acute distress. One kind of debt frequently met with is the unpaid grocery bill. This is sometimes quite as pressing as an unpaid rent bill. Another form of debt that presses sorely upon these families is the chattel-mortgage loan. This is a debt that constantly threatens to take the furniture out of the house. The charity organization helps the poor in many ways with their chattel-mortgage troubles, but they seldom pay the debt outright. This form of relief, therefore, does not appear in the table on page 893 showing kind of aid first given. In the preceding table, however, can be seen the extent to which the chattel mortgage entered into the poverty of these poor. In 26 families the exactions of the loan company were felt. The rates of interest were those usually charged in similar transactions. In one case there was a loan of \$25 to be paid in 18 fortnightly payments of \$2.50—\$20 for the use of \$25.00 for nine months. In another case a widow was behind two months in the payment of a loan. She had all the money except \$1, but the company, which had sent a notice of foreclosure threatening seizure the following day, demanded payment in full. Every cent of the debt had to be paid or the furniture would

^a This enumeration was not confined to the year 1905.

be taken. In this case the charity agent gave the needed dollar. The widow paid \$4.40 for the use of \$10 for four months.^(a)

DELINQUENCIES OF CHARITY RECIPIENTS.

Statistics as to the moral conditions which prevailed in these families and the extent to which vice and crime were associated with the poverty of these charity recipients are shown in the following table:

NUMBER OF WHITE AND NEGRO FAMILIES FOR WHICH SPECIFIED MORAL DELINQUENCIES WERE REPORTED.

Moral delinquencies.	Families.		
	White.	Negro.	Total.
Brutality, by husband.....		1	1
Cocaine habit, by husband.....		1	1
Desertion, by husband.....	20	68	88
Desertion, by son-in-law.....	1	1	2
Desertion, by wife.....		3	3
Desertion, by husband and wife.....		1	1
Desertion and gambling, by husband.....	1		1
Desertion and intemperance, by husband.....	6	3	9
Desertion and licentiousness, by husband.....	2	2	4
Desertion, by husband; licentiousness, by daughter.....		1	1
Desertion, by husband; licentiousness, by wife.....	1	3	4
Desertion, by husband; lawlessness, by wife.....		1	1
Dishonesty, by husband.....	1		1
Dishonesty and licentiousness, by husband.....	2		2
Dishonesty and lying, by husband.....	1		1
Disorderly conduct, by husband.....		1	1
Forgery, by husband.....	1		1
Gambling, by husband.....	1		1
Intemperance, by daughter.....		1	1
Intemperance, by husband.....	67	23	90
Intemperance, by man.....	2		2
Intemperance, by son.....	4	1	5
Intemperance, by wife.....		1	1
Intemperance, by woman.....	2		2
Intemperance, by husband and wife.....	6	1	7
Intemperance and criminality, by husband.....		1	1
Intemperance and lawlessness, by husband.....	4	1	5
Intemperance and lawlessness, by son.....	1	1	2
Intemperance and licentiousness, by husband.....	2	1	3
Intemperance and lying, by husband.....	1		1
Intemperance and neglect of family, by husband.....	3		3
Intemperance and neglect of parents, by son.....		1	1
Intemperance, by husband; morphine habit, by wife.....	1		1
Intemperance, by husband and wife, desertion, by husband.....	1		1
Intemperance and desertion, by husband; licentiousness, by wife.....	1		1
Intemperance and lawlessness, by husband and son.....	1		1
Lawlessness, by husband.....		8	8
Lawlessness, by man.....	2		2
Lawlessness, by son.....		3	3
Lawlessness, by wife.....	1		1
Lawlessness and licentiousness, by children.....		1	1
Licentiousness, by child.....		1	1
Licentiousness, by daughter.....	4	10	14
Licentiousness, by granddaughter.....		1	1
Licentiousness, by husband.....	1	1	2
Licentiousness, by niece.....		2	2
Licentiousness, by wife.....	6	9	15
Licentiousness, by woman.....	2	15	17
Licentiousness, by husband and wife.....	3	2	5
Licentiousness, by man and woman.....	1		1
Licentiousness, by woman and daughter.....		2	2
Licentiousness, by daughter; lawlessness, by son.....		2	2
Licentiousness and mendicancy, by daughter.....		1	1
Licentiousness, by wife; neglect, by husband.....		1	1
Lying, by wife.....		2	2
Mendicancy, by family.....	1	1	2

^a For a full account of the conditions of borrowing among the poor, see Bulletin of the Bureau of Labor, No. 64, pp. 622-633.

NUMBER OF WHITE AND NEGRO FAMILIES FOR WHICH SPECIFIED MORAL DELINQUENCIES WERE REPORTED—Concluded.

Moral delinquencies.	Families.		
	White.	Negro.	Total.
Mendicancy, by husband.....	1	.....	1
Mendicancy, by wife.....	2	1	3
Mendicancy, by woman.....	1	.....	1
Mendicancy and Intemperance, by husband and wife.....	1	.....	1
Murder, by husband.....	.....	1	1
Neglect of parents, by children.....	2	5	7
Neglect of parents, by daughter.....	.....	2	2
Neglect of parents, by son.....	2	9	11
Neglect, by mother.....	.....	1	1
Neglect, by son-in-law.....	.....	1	1
Neglect of mother, by children.....	.....	1	1
Neglect of mother, by son.....	.....	2	2
Neglect of family, by husband.....	7	10	17
Neglect of family, by husband; mendicancy, by family.....	1	.....	1
Thievery, by husband.....	1	1	2
Thievery, by sister.....	.....	1	1
Thievery, by son.....	3	2	5
Thievery, by wife.....	.....	1	1
Thievery and general immorality, by husband.....	.....	1	1
Total.....	174	220	394

In almost exactly two-thirds of the families there was no palpable delinquency whatever. This is to say, that a fairly decent standard of morals prevailed in a very large majority of the families. In almost exactly one-third of the families there was marked delinquency of some kind. Of the 394 families tainted by delinquency 174 were white and 220 colored, these numbers representing 38 per cent of the total white families and 30 per cent of the total colored families, respectively.

In charging delinquency against a family its whole charity record was taken into consideration, and in locating a fault it was sometimes necessary to go outside the economic group. In some cases it was exceedingly difficult to say whether there was delinquency or not. It was difficult to determine, for instance, in a case where the chief wage-earner—a widow—was arrested and incarcerated for stealing bread for her children whether there was delinquency. Because it was lawlessness it was decided that the woman was a delinquent. A man at the age of 59 married a young woman of 28. After the birth of several children there was a separation. Then the husband returned, another child was born, and there was another separation. This alternation of desertion and home-staying continued until the time of the investigation, when the husband, then at the age of 72, was a deserter and when there were seven children in the family. The husband was not charged with moral delinquency on account of the desertion, for the reason that at no time had the man been able to contribute much to the family support. In another very interesting case a man and a woman, who had never been legally joined in marriage, were living together and raising a family of children.

There seemed to be perfect loyalty, and the adulterous relation seemed to have no kind of effect upon the affairs of the household. Economically it was the same as if there had been a marriage certificate. The family was stamped of course with licentiousness, but the action of the couple contrasts favorably with the many cases where women with illegitimate children were abandoned. The facts bearing upon delinquency, besides being difficult to interpret, are also sometimes exceedingly difficult to ascertain. In one case, after a certain family had been scheduled as being without delinquency, the information was unearthed that the husband was a drunkard and for several years had been going on long sprees. During these years the charity agent had been patiently trying to learn the cause of the trouble, but her inquiries had been skillfully eluded.

The leading delinquencies as shown by the table are intemperance, desertion, licentiousness, neglect by natural supporters, lawlessness, thievery, and mendicancy. First among the delinquencies stands intemperance. In 128 families, more than 10 per cent of the whole number receiving charity and nearly one-third of all those in which delinquency was visible, intemperance was present. In the families afflicted by intemperance the husband was the delinquent in 114 cases. In not one family in a hundred is a drunken woman found. In 96 cases the intemperance was in white families and in 32 cases it was in colored families.

Next to intemperance stands the vice of desertion. In 144 cases there was wanton abandonment of the family, and in 137 of these cases the offender was the husband. In 102 cases the desertion occurred in colored families and in 42 cases in white families.

After intemperance and wanton abandonment the evil most apparent was licentiousness. Evidence of this delinquency was in many cases, of course, largely a matter of inference. Sometimes when the evidence was direct and clear it was still hard to brand the family with moral turpitude, as in the case of an old colored woman of 70 years who had never been married and who yet was the mother of children. Her error, however, was of another age and was committed in slavery times. The circumstance that most frequently supported the charge of licentiousness was the presence of illegitimate children. Of these there was an unusually large number—11 illegitimate white children and 68 illegitimate colored children. Of the 64 cases in which licentiousness is the principal charge women were the offenders in 61 cases. This disproportion between the sexes is due to the fact that the male offender was most frequently an outsider who could not be included in the enumeration. In 17 cases this vice was found in white families and in 47 cases in colored families.

Of the 43 cases of neglect by natural supporters shown in the table more than a third were chargeable to husbands and were therefore similar to cases of desertion. This neglect very often consisted in staying away from home for several days and nights at a time and spending whatever cash might be on hand. Sometimes the neglect took the form of intermittent desertion; the husband would go and come, supporting the family when at home and leaving it to shift for itself when away. Next to husbands, the greatest offenders in the way of neglect were grown sons. In 11 cases sons who were able to help their parents ungratefully withheld the sorely needed aid.

Mendicancy can not figure largely among delinquencies of charity recipients, for the reason that the charity organization withholds aid from mendicants. This evil, however, is one that the charity people have to deal with constantly, and now and then, as the table shows, a family in which there are beggars succeeds in securing doles. This is not surprising when the methods to which mendicants resort are considered. One family succeeded in exploiting fifteen different churches and organizations, the charity organization among the number. There were eight in the family, five being over 15 years of age, but nobody worked, not even the male head of the family. Another instance was that of an oily-tongued person who posed as a preacher and who received aid for several years before he was discovered to be a beggar and a fraud. In another case a mendicant family was holding membership in three different churches and passing under a different name in each church. The ruse was not discovered until the charity organization had been for some time a victim of the deception.

But more troublesome than mendicancy itself is a certain reliance upon charity, a certain inclination to pauperism, which crops out in many charity recipients. Such a spirit of dependence was visible in 69 families, 40 of which were white and 29 colored. The reliance upon charity here referred to did not quite assume the form of a positive delinquency. The dependence sometimes took on the aspect of faith, as in the case of an old man who, when asked why he did not go to the poorhouse, said that he relied on God to take care of him and keep him out of the poorhouse. When applying for charity it seemed to him that he was only falling in with a divine scheme. In some cases it is plain that the feeling of reliance is due to the unwise action of friends or of churches. "I fear the family has been too much petted by the church people" is the impression of one agent in respect to a family that was accustomed to haunt the charity office. Quite often the person put down as relying upon charity was an old colored woman who was used to getting help here and there from white people and who regarded the charity agent simply as one of her "white folks." A remarkable case of dependence was that of a woman who relied on an ex-slave to support her. The faithful domestic worked

only to keep her former mistress from want, and when the earnings were too scant for this it was the ex-slave and not the mistress that visited the charity office.

Farther removed from delinquency than reliance on charity is a certain perversity of pride which figures in these cases with sufficient frequency to warrant mention here. In at least a dozen cases the applicants went to the charity office because they were too stubborn or too proud to appeal to natural supporters who were able and willing to help them. "A rich brother would give aid," is the agent's note in one case, "but because she thinks he would give grudgingly she would rather take charity." In another case a woman applicant had relatives who would have helped her gladly. The agent wrote to the applicant suggesting that she appeal to her relatives for aid. The applicant refused, saying in the letter of reply: "It is very easy for you to advise me to do what Heaven and earth couldn't make you do if you were in my place."

In a very few cases the delinquency was so comprehensive and multifarious as almost to warrant its being classified as total depravity, but that classification was of course not practicable. In such cases poverty and delinquency are indissolubly united. The records in cases of this kind usually extend over many years—in one case over twenty years—and the account is a long story of crime, licentiousness, intemperance, and mendicancy.

CAUSES OF DISTRESS OF CHARITY RECIPIENTS.

Consideration is next given to the causes which operated to produce in more than a thousand families a distress so deep that relief could be found only in a charity office.

In characterizing the causes of poverty it is well to use only such terms as the poverty-stricken person himself would understand. In doing this the word "inefficiency" should rarely be used. A machine that does not fulfill the purpose for which it was constructed may be said to be inefficient and, by a metaphor, a man who does not do well the work for which he has been trained may be charged with inefficiency, but it is seldom that the charity seeker can justly be called inefficient. The conditions of life which surround the poverty-stricken class are incompatible with anything like efficiency. "It is the bitterest portion of the lot of the poor that they are deprived of the opportunity of learning to work well. To taunt them with that incapacity and to regard it as the cause of poverty is nothing else than a piece of blind insolence. Inefficiency is one of the worst and most degrading aspects of poverty; but to regard it as the

leading cause is an error fatal to a true understanding of the problem.”^(a)

The same reasons that dissuade from assigning “inefficiency” as a cause of poverty dissuade from assigning “ignorance” as a cause. It is true that large numbers of charity seekers are ignorant of the art of right living, and the poverty of these might be ascribed to “ignorance,” meaning that they were ignorant of the art of right living, but such a classification would not throw much light on the subject of poverty. Nor would it tell the charity seeker any useful things about himself. If a man is told that his poverty is due to drunkenness, or licentiousness, or lawlessness, or mendicancy, he will understand and may respond morally to what is said, but if he is told that it is due to ignorance he will not, can not, have the faintest notion of what is meant. Ignorance, like inefficiency, is one of the ugly aspects of poverty, but it can not be usefully regarded as one of the causes of poverty.

There is a phase of ignorance that may sometimes be rightly characterized as a cause of poverty. This is illiteracy. Modern life demands a knowledge of reading and writing, and a person who is ignorant of these arts is often as seriously impeded in the race for a livelihood as one who has a lame foot. The matter of illiteracy was therefore not disregarded in this investigation. As far as the records gave an account of the literacy of a family the facts were carefully noted. But the account was in many instances unsatisfactory and incomplete, and taking them altogether the facts relating to illiteracy were not full enough to tell the whole story. A correct picture of the literacy of those families was desirable, but even if one had been obtained, the additional knowledge thereby furnished would not have influenced the analysis now being made, for it happens that in these charity cases illiteracy, pure and simple, figures hardly at all as a cause of poverty. In one case a boy could not get employment as a messenger because he could not read and write. In another case a delicate man could not get a clerkship in a store for the same reason. Here ignorance in the sense of illiteracy was unquestionably a cause contributing to the poverty. In neither case, however, did it happen to be a cause of such weight as to deserve notice in the schedules.

“Irregularity of employment” is another expression that has been avoided in the characterization of the causes of poverty, although this cause is at the bottom of so much distress that it might be justifiable to call irregularity of employment the “causing cause” of poverty. But such language is too broad to be useful. Industrial

^a J. A. Hulson: Problems of Poverty, p. 167.

society, especially that segment of it wherein these charity recipients are comprised, is organized on the basis of irregularity of employment. Among these workers there is no certainty that employment of any kind, regular or irregular, will be secured, and even when regular employment has been secured, many things, like sickness, severe weather, accident, fire, flood, panic, dullness of trade, strikes, or lockouts intervene to make it irregular. To say, therefore, that a man's poverty is due to irregularity of employment is hardly more than to say that it is due to the adverse conditions which prevail in the industrial world.

But, while irregularity of employment has not been used as a convenient term in the enumeration of the causes of poverty, the subject has nevertheless received careful attention in this study. In every case examined this question was asked: Does the chief wage-earner of this family seem to have a steady job? In those cases where the employment seemed to be of a kind that usually continues right along without serious break, the employee was regarded as being regularly employed. In all other cases the employment was put down as irregular. The result is seen in the table on pages 886 and 887. Of the 1,051 cases in which it was possible to characterize the employment of the chief wage-earner as regular or irregular, 919 were irregular. That is to say, in about one family in eight the chief wage-earner could feel that he had steady work, while in seven-eighths of the cases the chief wage-earner was liable to lose his job at any moment. "The curse of the American workman," says Dr. T. S. Adams, "is irregular employment."^a If this is true of the whole class of workmen, how distressingly true is it of the workmen among these charity recipients.

The expression "financial element" is used in this discussion as a comprehensive phrase referring to a certain restricted class of causes which operate to produce distress. At first thought "financial element" would seem to be at the bottom of every case of distress. In a certain sense this is true, but for the purpose of this analysis a case of distress can not be so easily disposed of. For instance, there was a man whose wages were \$5 a day, whose services were in demand, and who worked quite regularly, but he squandered his money by drinking and gambling, and his wife and children were thrown upon charity. It would not be correct to ascribe this distress to a lack of money, and the case shows that there is a nonfinancial as well as a financial element which operates to produce distress. The financial element, as used here, includes one, or several, or all of the following causes: Insufficient earnings, lack of employment, sickness, accident, old age, and severe weather. All of these in the last analysis operate

^a T. S. Adams: Labor Problems, p. 170.

like a financial cause in producing distress. In 28 of the families the "financial element" was not visible at all. In these families it was not possible to point to insufficient earnings, nor to lack of employment, nor to sickness, nor to accident, nor to old age, nor to severe weather, as contributing to the poverty; the financial element figured neither openly nor in disguise. Of the 28 families in which only the nonfinancial element appeared as the cause of distress 20 were white and 8 were colored.

IMMEDIATE CAUSES OF DISTRESS.

Usually a case of distress acute enough to drive a family to charity is complicated. The following is typical of many: "The husband has been out of work for two months; they are back in their rent and notice has been served and they are likely to be set out on the street. There is nothing in the house to eat, while the wife expects to be confined in a very short time." At first glance it appears that the cause of distress in this case can be expressed by a single phrase. Lack of employment would seem to account satisfactorily for the distress. If, however, the record went on to show that a prolonged spell of cold weather prevented the husband from following his usual vocation, an indirect or contributing cause, namely, severe weather, would have figured in the account. If further study of the record showed that the wife was an invalid with tuberculosis and that for years the family had been kept down by reason of her condition, still another fact would have to be reckoned with, and sickness might have to be set down as the underlying, permanent cause of the destitution.

This typical case, then, foreshadows three classes of causes, direct or immediate causes, indirect or contributing causes, and dominant or persistent causes.

Immediate causes are those catastrophies—the debauch of the father, the confinement of the mother, the sudden and unexpected loss of work, the visitation of death—which overtake the family. The immediate cause is the one that impinges directly upon the consciousness of the applicant and the one that seems to hurry him to the charity office. It is the cause which the applicant himself is apt to assign as a reason for making an appeal to charity. "What brings you here asking for aid?" inquires the charity agent of the applicant. In the answer to this question will usually be found what is here called the immediate cause.

The direct causes of distress in all the families are shown in the table which follows:

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY IMMEDIATE CAUSES OF DISTRESS.

Immediate cause of distress.	White.		Negro.		Total	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Accident.....	17	85	28	156	55	240
Blindness.....			4	15	4	15
Death in family.....			3	16	3	16
Desertion.....	5	21	7	24	12	45
Incarceration.....	6	16	7	22	13	38
Insufficiency of earnings.....	26	126	55	241	81	367
Intemperance.....	12	77			12	77
Lack of employment.....	196	821	201	831	397	1,652
Lack of employment and old age.....			1	3	1	3
Lameness.....	1	3	1	3	2	6
Loss by fire.....	2	8	3	9	5	17
Loss of horse.....	1	4			1	4
Loss of income from roomers.....			1	3	1	3
Loss of money.....			1	2	1	2
Neglect by natural supporters.....	4	18	7	26	11	44
Old age.....	9	11	40	53	49	64
Old age and blindness.....			1	2	1	2
Severe weather.....	2	10	4	12	6	22
Sickness.....	170	659	255	1,061	525	1,740
No good cause.....	1	1	2	7	3	8
Total.....	452	1,800	731	2,505	1,183	4,365

- * Including 4 Negroes, members of white families.
- * Not including 4 Negroes, members of white families.
- * Including 5 Negroes, members of white families.
- * Not including 5 Negroes, members of white families.
- * Including 9 Negroes, members of white families.
- * Not including 9 Negroes, members of white families.

Sickness easily leads the list. In nearly half the families that applied for aid for the first time in 1905 the distress was directly connected with some form of bodily ailment.^(a) There was almost every kind of disease which flesh is heir to, but the greatest distress was caused by rheumatism and tuberculosis, the latter leading by far all the other diseases.

Figures can not tell the complete story of the ravages made by sickness in these families. In one case the whole family was prostrate at one time. In another case a teamster regularly employed at fairly good wages by a great express company was brought to charity by a prolonged illness. In still another case where the regular wages of the husband was \$60 a month the sum of \$800 had been saved. Sickness came and remained for many months and before it departed every cent of the savings was wiped out, and the family

^a The cases of sickness include 71 cases of childbirth. Confinement, physiologically considered, is not sickness, but its economic result is the same as that of sickness. In the records of some families confinement time is the only time when charity is resorted to. The aid given upon the occasion of confinement is quite frequently clothing for the new-born babe. "Found woman needed a few articles of clothing for the baby that was to be born," is the note of the agent in one case. "Would you be willing to see that the mother has an outfit for the baby? If you do not I fear the little thing will have to be wrapped up in rags," are the words of a letter written to the agent in respect to another case.

was reduced to charity. Good wages, thrift, and regularity of employment, all combined, availed not to save the family from the havoc of a long illness.

Next to sickness among the causes of immediate distress is the lack of employment, more than one-third of the families having sought relief for this cause. It will be understood that lack of employment is to be taken here as meaning an entirely different thing from irregularity of employment. The latter expression as employed in this article has been used to denote a certain unsteadiness in the nature of the man's job or a certain insecurity in his tenure of it. Lack of employment on the other hand refers to the man's definite inability to get work during a definite period of time whether his usual vocation is classed as regular or irregular. For example, a man whose occupation is that of a clerk in a store loses his position and before he can secure another place becomes an object of charity. Here the man's employment is classed as "regular" but the immediate cause of his distress is put down as "lack of employment."

The charity records are constantly referring to the evil resulting from lack of employment:

"X has been out of work nine weeks and has used up all he saved." In this case X was a sober man and a member of a union, with a wage of \$3.50 per day—when he could get work.

"While the husband was at work his wages, together with those of his wife, were sufficient to support his family, but when the husband lost his job for only a week the family was thrown upon charity."

"The man earned \$4 a day at structural ironwork, but a long-continued spell of bad weather exhausted the funds and brought the man to poverty."

"The father had tramped all over the city looking for work until his feet were sore."

In the last excerpt the reference to feet made sore by tramping in search for work calls attention to one of the most serious phases of the distress that is wrought by lack of employment. If a period of enforced idleness were a season of recuperation and rest there would be a good side to lack of employment. But enforced idleness does not bring recuperation and rest. The search for labor is much more fatiguing than labor itself. An applicant sitting in one of the charity offices waiting for the arrival of the agent related his experiences while trying to get work. He would rise at 5 o'clock in the morning and walk 3 or 4 miles to some distant point where he had heard work could be had. He went early so as to be ahead of others, and he walked because he could not afford to pay car fare. Disappointed in securing a job at the first place, he would tramp to another place miles away, only to meet with disappointment again. Then

would follow long journeys to other places. After a day consumed in useless tramping he would make his way home, exhausted in body and depressed in spirit. The next day would be a repetition of the day before, and every day it became more and more difficult to go home to his family without anything to give them. "It almost grieves a man to death," he said, "not to have something to give his wife and children." As the man told his story he drove home the truth that lack of employment means far more than simply a loss in dollars and cents; it means a drain upon the vital forces that can not be measured in terms of money.

Next to sickness and lack of employment in the list, but a long way behind both, stands insufficient wages as a direct cause of distress. Insufficient wages means that the rate of wages was so low that the family could not live upon the earnings, even though the full wage was being received at the time of the application. The preceding table shows that 81 families whose wage-earners were regularly employed were compelled to supplement their earnings by doles from the charity office.

In determining whether the wage was sufficient for subsistence or not, a calculation was made based upon the supposition that an adult male requires at least \$1 per week for food (uncooked).^(a) In estimating for rent in the calculation, a monthly sum ranging in amount from \$5 to \$8, according to the size of the family, was allowed. When these allowances for food and rent consumed all (or practically all) the earnings of the family visible at the time of the application, the immediate cause of the distress was determined to be insufficient wages. A glance at the earnings shown in the tables on pages 890 to 892 will show that the methods of determination here adopted would very frequently result in finding insufficient wages as the cause of the distress. But the conclusions embodied in the table on page 905 were not drawn from the preceding tables. In these tables account was taken only of the wages of the chief earner, whereas in the later table the earnings of all the members of the family were taken into account. In making the table on page 905, very frequently a family was regarded as receiving insufficient earnings, even though the exact amount of these earnings was not stated. Thus where the applicant was a widow with 6 small children and her earnings consisted only of what she made at the washtub, the cause of distress was put down as insufficient earnings, for the reason that the regular work of one woman at washing and ironing will not bring in enough to support a family of 7. When forming conclusions as to whether the wages received were sufficient or not, hard and fast rules were often found to be impracticable. Each case was

^a See Bulletin of the Bureau of Labor, No. 64, p. 603. The consuming power of a family was estimated by the method indicated on page 602 of Bulletin 64.

studied in its entirety and judgment was based upon all the facts. A few illustrations will serve to show how this subject was treated in cases where wages were indefinitely stated:

1. A family of 8 persons. The rate of wages is not stated, but the records show that when it was a family of 6 persons the husband was earning \$1.52 per day as a laborer and that this was not sufficient at times to keep them from charity. Although the rate of wages at the time of application in 1905 is not given, the occupation of the husband was in that year still that of a laborer, and since the family had increased to 8 persons there was no hesitation in ascribing the distress to insufficient earnings.

2. A family of 9 persons. The father is a waiter, the wife a laundress. A girl of 16 nurses and a boy of 15 earns a little now and then at jobbing. The young children go to school. When all the wage-earners are at work, there is no need for charity, but when the wages of a single member of the family are cut off or interfered with recourse to charity had to be made. For the reason that it was only normal and inevitable that some untoward events should arise, the destitution was put down to insufficient wages. Where the wages are so low that the least ripple of adversity brings a family to poverty, wages may be fairly regarded as insufficient.

3. A case extending over many years. An aged couple work and make what they can. Their work was irregular and sometimes they earned so little that they were compelled to visit the charity office. Here not insufficient earnings but old age was regarded as the direct cause.

4. A family of two—man and wife—both quite old. The man served as a watchman at \$5 per week, a sum not sufficient to keep himself and wife from charity. The man worked regularly and performed his work well. Not old age, but insufficient wages was here assigned as the direct cause.

5. A family of 9 persons. Husband's salary \$9 per week. Oldest boy clerks at \$3 per week, but his earnings are not regular. Agent states that "man has regular work, but family is so large that it is not sufficient for their needs." The distress in this case was determined to be due to insufficient wages, the conclusion being based in part upon the comment of the agent.

In 55 families the immediate cause of distress was accident. This cause in its economic results is quite like that of sickness, and viewed in this light the cases of accident might very properly have been classified with those of sickness. One phase, however, of the subject of accidents among the poor requires special notice—the phase bearing upon the question of the employer's liability. As the cases are studied one is impressed with the justness of liberal liability or com-

pensation laws for workmen. A few of the agents' notes descriptive of accidents may suffice to show present conditions:

1. A man was working, helping in the building of a house. While wheeling a wheelbarrow he stepped aside to let a fellow-workman pass. In passing he was jostled and was caused to lose his balance. He fell and was made a permanent cripple. He received no compensation.

2. A man was working for a large transportation company, handling boxes. At 3 p. m. he hurt his foot severely. Nothing was allowed in the way of liability, and the statement is made that the man was paid for only three-fourths of a day's work.

3. A man was injured by an explosion while working on a sewer for the city. In this case a small indemnity was allowed, but the authorities explicitly stated that the city was under no obligations to give anything, although the disability caused by the accident was permanent.

4. A man was working at a freight depot and while in the performance of his labors met with an accident which cut off his earnings for several weeks, and which sent him to charity. No compensation.

5. A man was caught in a rope and crushed before the machinery could be stopped. The accident, it was alleged, was due to the fact that there were not proper appliances of safety to the machine. No compensation.

Fifth among the causes that urged these families to seek the charity office was old age. In 49 families the applicant's earning power had been exhausted by the weight of years. "I am worn out," was the way one applicant, a physician of four score and seven, expressed it. In many of the old-age cases there is a record of but one visit to the charity office. This often meant that the applicant had found a permanent home either in the grave or in the poorhouse.

The five leading direct causes that operate to throw the poor upon charity have been pointed out. It is seen that sickness, lack of employment, insufficient wages, accident, and old age constitute nearly 94 per cent of all the direct causes. This is to say that in nearly nineteen cases out of twenty the impelling cause of the application is directly referable to a financial factor; either the rate of wage is too low for subsistence, or there is a stoppage of income due to a lack of employment, to sickness, to accident, or to old age.

Most of the remaining direct causes are so remotely connected with the question of wages that they may be regarded as nonfinancial. Sudden desertion may plunge a family into temporary distress even when the deserter is receiving high wages. A spree will often cause a resort to charity even though the husband is in receipt of a fairly good income. A man whose family is subsisting upon charity may be lying in prison for the commission of a crime, yet his incarceration, the direct cause of his family's distress, may have had nothing whatever to do with the question of wages. The nonfinancial direct

causes, however, form but an insignificant portion of all. In only about one case out of twenty can it be said that a financial element did not figure as an immediate cause of distress.

CONTRIBUTING OR INDIRECT CAUSES OF DISTRESS.

Usually the story of a charity case is only begun when the direct cause has been stated. In the following table it is shown that in 854 of the families a contributing cause might be added to the cause that appears on the surface. In 329 families the direct cause told the whole story. The case was simply due to a temporary loss of employment, to a debauch, to a spell of cold weather, or to some other isolated and perhaps nonrecurring circumstance.

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY CONTRIBUTING CAUSES OF DISTRESS.

Contributing cause.	White.		Negro.		Total.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Accident.....	1	4	5	18	6	22
Affliction of children.....			1	3	1	3
Blindness.....	1	2	5	15	6	17
Blindness (partial).....	1	1	2	8	3	9
Death in family.....			3	17	3	17
Deformity.....			1	1	1	1
Desertion.....	26	95	61	212	87	307
Disability.....	1	3			1	3
Dullness of trade.....	1	3			1	3
Feeble-mindedness.....	4	11	2	12	6	23
Imbecility.....			1	4	1	4
Incarceration of husband.....			3	16	3	16
Insanity.....	3	4			3	4
Insufficient earnings.....	15	79	37	211	52	290
Insufficient earnings and neglect.....		8			1	8
Insufficient earnings and shiftlessness.....	1	9			1	9
Intemperance.....	50	a 251	17	b 102	67	353
Intemperance and old age.....	1	4			1	4
Lack of employment.....	12	65	29	97	41	162
Lameness.....			4	10	4	10
Lawlessness.....	1	1			1	1
Lawlessness and licentiousness.....			2	10	2	10
Licentiousness.....	4	9	20	63	24	72
Loss of money.....	1	3	1	4	2	7
Maltreatment.....	1	1			1	1
Mendicancy.....	3	15	2	7	5	22
Morphine habit.....	1	3			1	3
Neglect by natural supporters.....	8	36	24	58	32	94
Old age.....	36	60	76	140	112	200
Old age and lawlessness.....	1	1			1	1
Old age and neglect.....			1	2	1	2
Old age and sickness.....			1	3	1	3
Severe weather.....	22	106	57	188	79	294
Severe weather and old age.....			2	4	2	4
Shiftlessness.....	37	146	18	72	55	218
Shiftlessness and intemperance.....			1	9	1	9
Shiftlessness and neglect.....	1	6			1	6
Shiftlessness and thievery.....			1	2	1	2
Sickness.....	90	c 404	146	d 601	236	1,005
Sickness and intemperance.....	1	7	2	12	3	19
Sickness and neglect.....			1	2	1	2
Sickness and severe weather.....			1	8	1	8
Thievery.....	1	2	1	4	2	6
None apparent.....	126	521	203	590	329	1,111
	452	e 1,860	731	f 2,505	1,183	4,365

a Including 2 Negroes, members of white families.

b Not including 2 Negroes, members of white families.

c Including 7 Negroes, members of white families.

d Not including 7 Negroes, members of white families.

e Including 9 Negroes, members of white families.

f Not including 9 Negroes, members of white families.

The list of contributing causes differs essentially from that of immediate causes. Sickness, insufficient earnings, lack of employment, and accident figure very much less than they did in the direct causes, while desertion, intemperance, and neglect by natural supporters figure very much more. New causes, too, appear. Among these are licentiousness, shiftlessness, mendicancy, and thievery. Plainly none of these could very well appear as direct causes. The applicant could hardly say that he made the appeal for charity because he was a beggar or because he was a thief.

A broad survey of the surface causes of distress showed that in a vast majority of cases the trouble was at bottom due to financial adversity. A broad survey of the contributing causes shows that the undercurrent of distress is strongly colored with moral delinquency. Desertion, intemperance, licentiousness, neglect by natural supporters, mendicancy, and thievery constitute about 25 per cent of all these contributing forces. The subject of contributing causes is therefore closely interwoven with the subject of moral delinquencies.

Among the contributing causes is one which has not been set down as a delinquency but which in quality closely approaches delinquency, namely, shiftlessness. In 55 families this has been given as the contributing cause. Shiftlessness is here regarded as consisting in a failure to make the best of opportunities. It is not exactly laziness. Laziness does not appear in any of the tables as a cause of distress, for the reason that the charity agents will not give to lazy people. If the wage-earner is suspected of being lazy a "work test" is applied. When the industry of a man is a question of doubt he is sent to the municipal workhouse where he can earn some money at sawing wood. A woman suspected of being lazy is given an opportunity to earn something by sweeping or cleaning or scrubbing. If the applicant will do the work provided for him he is not regarded as being lazy. If he will not do the work he is put down as lazy and relief it withheld. Thus lazy applicants are not enrolled among the recipients and, theoretically, laziness is not discoverable in the records.

Because shiftlessness is not downright laziness it has not been set down in this study among the moral delinquencies, the class in which laziness undoubtedly belongs. But shiftlessness is very similar to laziness. For instance, a family comes from the country to live in the city. It can not stir itself to meet the demands of city life. There are girls in the family old enough to work, but they shrink from work because they have not been accustomed to earn a living and are unable to adjust their notions to urban conditions. Positions are secured for them, but they work in a half-hearted way and soon find themselves out of employment. The wages of the father are insufficient to feed all the mouths, and the family finds itself in distress. In the records of such families there is an habitual failure

to take hold and do the best that can be done, and where such failure is evident it has been characterized as shiftlessness.

One other cause contributing greatly to the poverty of these families must receive notice here. This is severe weather. In 79 families nature itself operated to produce distress. "Please be kind enough," said one applicant in a note written to the agent, "to send me some groceries and fuel, as I am very much in need. It is very hard to get on now with all this family, and my husband has not been working this cold weather when the ground is frozen. Remember me, please, and God will remember you." Lack of employment was put down in this case as the direct cause, but a cause almost as direct was severe weather. Some of the agents' notes show the ways in which the cold weather contributes to poverty:

"The family was in need of fuel, as they were unable to pick up any cinders on account of snow."

"It was simply impossible to get out and do work, there was so much snow on the ground."

"He (a blind man) couldn't stand on the street and sell shoe strings and peanuts, it was so cold."

"Impossible to do her washing, as the pipes and hydrants are frozen and she has to walk three squares for water."

"He (a ragpicker) can not work in the ice and snow."

The connection between severe weather and poverty in Washington is brought out in the following table. It is found that in nearly three-fourths of the cases aid was given for the first time in the months of December, January, and February, whether the first aid given for the year 1905 or the first recorded aid for any year is considered.

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY MONTHS IN WHICH THE FIRST AID FOR THAT YEAR WAS GIVEN.

Race.	Families to which first relief was given in the month of—												Not reported.	Total.
	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		
White.....	134	102	36	13	11	11	15	16	12	11	27	64	.....	452
Negro.....	266	248	41	20	8	9	5	12	6	10	26	79	1	731
Total.....	400	350	77	33	19	20	20	28	18	21	53	143	1	1,183

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY MONTHS IN WHICH THE FIRST RECORDED AID FOR ANY YEAR WAS GIVEN.

Race.	Families to which first relief was given in the month of—												Not reported.	Total.
	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		
White.....	100	86	47	15	8	13	14	14	12	15	34	93	1	452
Negro.....	223	223	49	10	11	10	5	9	6	12	36	136	1	731
Total.....	323	309	96	25	19	23	19	23	18	27	70	229	2	1,183

PERSISTENT CAUSES OF DISTRESS.

When determining what was the underlying or persistent cause or causes of a family's distress it was found necessary to reckon with a time element. In the case of a family where the records showed only one application for aid, or where the distress continued for only a short period of time, the dominant or persistent cause was of course not discernible. The records revealed a persistent cause only when the charity history extended through several years. When looking for the persistent cause, therefore, it became necessary to confine the search to those families whose charity career was of considerable duration.

In the following table it is seen that in 683 cases, for which reports were made as to the year in which relief was first given, the record went back of 1905. In 307 cases the family had been upon charity for five years or more; in 56 cases for ten years or more; in 13 cases for fifteen years or more, and in 3 cases for twenty years or more. In one case the year was not reported.

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID IN 1905, BY YEAR IN WHICH AID WAS FIRST RECEIVED.

Race.	Number of families receiving relief in 1905.	Families receiving relief in 1905 who were first given relief in—											
		1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1905.	1894.
White.....	452	183	72	41	20	16	11	16	24	18	23	12	5
Colored.....	731	316	98	63	46	20	21	32	28	39	39	6	9
Total.....	1,183	499	170	104	66	36	32	48	52	57	62	18	14

Race.	Families receiving relief in 1905 who were first given relief in—											
	1893.	1892.	1891.	1890.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	Year not reported.
White.....	3	1	1	1	.....	1	.....	1	.....	1	1	1
Colored.....	5	1	.....	1	1	1	2	2	1	.....	.....	.....
Total.....	8	2	1	2	1	2	2	3	1	1	1	1

It was found convenient to classify the cases as temporary, intermittent, or permanent. When it is said that a case is temporary, it is meant that the records show no occasion of distress previous to the first application in 1905 and no further recourse to the Associated Charities for aid after the distress of that year was relieved. This does not mean, however, that in a temporary case there was only one act of relief, for many cases designated as temporary involved records

extending over several months and showed that numerous doles were given. They were put down as temporary because they covered one definite season of distress and that not a very long one. Nor must it be thought that because a case was classified as temporary that the family was no longer a recipient of charity. In some cases temporary relief marked only a step on the road to the poorhouse. More often, however, it marked only a short period of misfortune and one that was safely tided over. A tailor with his wife and two small children drifted to Washington to search for work. Employment was not speedily found and the funds were exhausted. The wife applied to charity. Correspondence brought out the fact that the man's record was excellent. A former employer wrote that the applicant was a first-class workman, upright, sober, and anxious to work. The charity people helped him a little with provisions and secured him suitable employment, and that was the beginning and the end of his experience with charity. In the temporary case we sometimes get a glimpse of a family at the lowest ebb of its fortunes—just when it is in the trough of adversity. For example, a husband works at \$5 a week while his wife earns what she can at the washtub. The combined earnings do not meet the demands of the family, and charity is sought. But at the very time of distress two boys large enough to work begin to earn something, and the family makes no further appeal for aid. Sometimes the temporary case marks simply a sharp short crisis in domestic affairs. A chief wage-earner deserts his family, leaving it penniless. At first there is nothing to do but to go to the charity office. When new adjustments have been made, however, and the wife and children have found employment, no further appeal for aid is made.

The immediate and contributing causes of distress in temporary cases are set forth in the following tables. It is seen that of all the charity cases more than one-third (415) mark only a fleeting period of adversity. The tables show, too, that the immediate causes of these temporary appeals to charity are mainly sickness and lack of employment, the distress in more than three-fourths of the cases being due to these two causes alone. Among the contributing causes of the temporary cases sickness still holds the lead, although desertion, intemperance, and licentiousness are much more conspicuous among the contributing than among the direct causes of temporary distress.

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID FOR TEMPORARY DISTRESS IN 1905, BY IMMEDIATE CAUSES OF DISTRESS.

Immediate cause.	White.		Negro.		Total.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Accident.....	2	8	3	3	5	11
Accident to husband.....	4	20	8	31	12	51
Accident to wife.....	.....	.....	3	7	3	7
Desertion by husband.....	4	18	4	12	8	30
Incarceration.....	1	1	.....	.....	1	1
Incarceration of husband.....	1	2	2	2	3	4
Incarceration of widow.....	.....	.....	1	4	1	4
Insufficient earnings.....	7	30	16	82	23	112
Intemperance of husband.....	1	5	.....	.....	1	5
Lack of employment.....	60	229	80	279	140	508
Lameness of wife.....	.....	.....	1	3	1	3
Loss by fire.....	2	8	3	9	5	17
Loss of horse.....	1	4	.....	.....	1	4
Loss of money.....	.....	.....	1	2	1	2
Neglect by husband.....	1	6	2	11	3	17
Neglect of family by husband.....	.....	.....	1	3	1	3
Old age.....	.....	.....	9	10	9	10
Old age, blindness.....	.....	.....	1	2	1	2
Severe weather.....	.....	.....	2	8	2	8
Sickness.....	19	21	38	41	57	62
Sickness of child, pneumonia.....	.....	.....	1	7	1	7
Sickness of children.....	2	10	1	7	3	17
Sickness of daughter.....	1	6	3	7	4	13
Sickness of grandchild.....	.....	.....	1	5	1	5
Sickness of husband.....	20	96	35	118	55	214
Sickness of husband and wife.....	1	4	1	5	2	9
Sickness of mother.....	.....	.....	1	3	1	3
Sickness of mother, heart disease.....	.....	.....	1	4	1	4
Sickness of son, tuberculosis.....	.....	.....	1	7	1	7
Sickness of sons.....	.....	.....	2	6	2	6
Sickness of wife.....	8	26	51	155	59	181
Sickness of wife, la grippe.....	.....	.....	1	2	1	2
Sickness of wife, pneumonia.....	.....	.....	1	3	1	3
Sickness of woman.....	1	2	3	10	4	12
Sickness of woman, tonsillitis.....	.....	.....	1	3	1	3
Total.....	136	496	279	851	415	1,347

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID FOR TEMPORARY DISTRESS IN 1905, BY CONTRIBUTING CAUSES OF DISTRESS.

Contributing cause.	White.		Negro.		Total.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Accident.....	.....	.....	1	1	1	1
Accident to husband.....	.....	.....	2	9	2	9
Affliction of children.....	.....	.....	1	3	1	3
Blindness of husband.....	1	2	1	2	2	4
Childbirth.....	.....	.....	1	3	1	3
Death in family.....	.....	.....	1	6	1	6
Deformity of face.....	.....	.....	1	1	1	1
Desertion.....	.....	.....	3	7	3	7
Desertion by husband.....	4	15	15	49	19	64
Desertion by son-in-law.....	1	6	.....	.....	1	6
Disability of wife.....	1	3	.....	.....	1	3
Feeble-mindedness.....	1	1	.....	.....	1	1
Insufficiency of earnings.....	3	11	12	60	15	71
Intemperance.....	4	16	.....	.....	4	16
Intemperance and old age.....	1	4	.....	.....	1	4
Intemperance of husband.....	6	26	3	22	9	48
Lack of employment.....	2	7	5	13	7	20
Lack of employment of daughter.....	.....	.....	1	3	1	3
Lack of employment of wife.....	1	4	1	3	2	7
Lameness of husband.....	.....	.....	1	3	1	3
Lameness of sons.....	.....	.....	1	3	1	3
Lawlessness.....	1	1	.....	.....	1	1
Licentiousness.....	1	1	7	17	8	18
Licentiousness of daughter.....	.....	.....	2	8	2	8
Licentiousness of wife.....	.....	.....	1	2	1	2
Licentiousness of woman.....	1	2	.....	.....	1	2

NUMBER OF WHITE AND OF NEGRO FAMILIES RECEIVING AID FOR TEMPORARY DISTRESS IN 1906, BY CONTRIBUTING CAUSES OF DISTRESS—Concluded.

Contributing cause.	White.		Negro.		Total.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Loss of money.....	1	3	1	4	2	7
Maltreatment of employer.....	1	1			1	1
Morphine habit of wife.....	1	3			1	3
Neglect by children.....	2	10	8	15	10	25
Neglect by husband.....	1	5	3	9	4	14
Old age.....	6	12	17	30	23	42
Old age and lawlessness.....	1	1			1	1
Old age of mother.....			2	8	2	8
Partial blindness of daughter.....			1	5	1	5
Partial blindness of wife.....			1	3	1	3
Severe weather.....	8	36	19	47	27	83
Shiftlessness.....	4	13	4	15	8	28
Shiftlessness and intemperance.....	1	3	1	9	2	12
Shiftlessness of sons.....	1	3			1	3
Sickness.....	8	21	3	9	11	30
Sickness and intemperance.....			1	6	1	6
Sickness and severe weather.....			1	8	1	8
Sickness of aunt.....			1	5	1	5
Sickness of child.....	1	3			1	3
Sickness of daughter.....			6	18	6	18
Sickness of husband.....	1	4	4	13	5	17
Sickness of mother.....			1	5	1	5
Sickness of son.....	1	5	5	21	6	26
Sickness of wife.....	15	74	28	100	43	174
Sickness of wife and neglect by son.....			1	2	1	2
None apparent.....	55	202	107	293	162	495
Not reported.....	1	1	4	11	5	12
Total.....	136	496	279	861	415	1,347

The intermittent case is where the appeal for aid is made only at intervals, sometimes of long and sometimes of short duration. In many a family prosperity alternates with adversity. For example, a large family is mentioned, which, in its whole career, has enjoyed much of prosperity, but has not been able altogether to keep its name from the charity roll. In 1902 a cold snap drove it to the charity office. In 1904 the husband lost his job for several weeks and appeal for aid had to be made again. In 1905 a prolonged spell of sickness caused a third appeal to be made. The family tried hard to keep its head above water, but once in a long while it was unable to do so unaided. Sometimes an intermittent case shows a strange regularity in the recurrence of the date of application. In one case application was made and aid was given January 6, 1904, January 12, 1905, January 12, 1906, January 17, 1907. In another family aid was given January 20, 1905, February 21, 1906, February 5, 1907. In these cases coal was given each time, and the periodicity of the distress gave rise to a suspicion that the applicants were something of frauds, and that the charity office was visited merely because experience had taught that at about a certain time in the year a little fuel could be secured. Sometimes, in the intermittency of the distress, there can be read the varying fortunes of the family. A widow was left in 1892 with 7 children, the ages of the children being respectively 15, 13, 10, 7, 6, 5, 3. During the years 1892, 1893, 1894, and 1895 her applica-

tions for relief were frequent. In 1896 they became less frequent and by 1899 they had ceased, not to begin again until 1905, when the sickness and death of one child and the loss of the wages of another brought the family again to charity. In this case it was plain that the applications for charity decreased in number as the children grew older and thus made an increase in the labor resources of the family. Frequently the charity record ends altogether when the children get large enough to bring in some money.

All cases that were neither temporary nor intermittent were classified as permanent. A permanent case differs from an intermittent case only in the continuity of the relief. Where aid was given right along, week after week for months and years, without serious break, the case was designated as permanent.

Where the relief was either permanent or intermittent, some dominant or persistent cause was usually discoverable. In the following table, where the persistent causes in both permanent and intermittent cases are given, it is seen that in 768 cases, or in nearly two-thirds of all, it was possible to assign a persistent or underlying cause of the poverty.

NUMBER OF FAMILIES RECEIVING PERMANENT OR INTERMITTENT AID IN 1905, BY PERSISTENT CAUSES OF DISTRESS.

Persistent cause	Permanent aid.		Intermittent aid.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Accident.....	2	3	4	16
Accident and sickness.....			1	8
Blindness.....	5	12	1	4
Criminality.....	1	10	1	2
Criminality and shiftlessness.....	2	4		
Desertion.....	9	38	64	194
Disability.....	3	11	4	15
Dishonesty and licentiousness.....	1	5	3	16
Incarceration of husband.....			1	1
Injured arm.....	1	2		
Insanity.....	7	33	42	244
Insufficient wages.....			1	4
Insufficient wages and desertion.....	1	9	1	8
Insufficient wages and intemperance.....	1	4	1	5
Insufficient wages and licentiousness.....	1	9		
Insufficient wages and mendicancy.....	1	8		
Insufficient wages and neglect.....	1	2	1	2
Insufficient wages and old age.....	1	9		
Insufficient wages and shiftlessness.....	9	51	10	52
Insufficient wages and sickness.....	9	53	46	252
Intemperance.....			7	46
Intemperance and lack of employment.....			1	3
Intemperance and neglect.....			1	3
Intemperance and lawlessness.....	2	5	1	1
Intemperance and old age.....	2	10	2	6
Intemperance and shiftlessness.....			5	28
Intemperance and sickness.....	3	13	47	226
Lack of employment.....			1	5
Lack of employment and disability.....	3	18	43	216
Lack of employment and sickness.....	1	1		
Laziness.....	10	38	2	5
Licentiousness.....			1	3
Licentiousness and desertion.....			1	1
Lunacy.....				

**NUMBER OF FAMILIES RECEIVING PERMANENT OR INTERMITTENT AID IN
1905, BY PERSISTENT CAUSES OF DISTRESS—Concluded.**

Persistent cause.	Permanent aid.		Intermittent aid.	
	Fam- ilies.	Per- sons.	Fam- ilies.	Per- sons.
Mendicancy.....	3	18	1	3
Mental weakness.....			1	6
Neglect by natural supporters.....	2	6	10	43
Neglect and desertion.....			1	4
Not discoverable.....			3	13
Old age.....	37	50	64	113
Old age and mendicancy.....	1	2		
Old age and neglect by natural supporters.....	2	4		
Old age and shiftlessness.....	3	6		
Shiftlessness.....	19	80	63	262
Shiftlessness and desertion.....			1	5
Shiftlessness and feeble-mindedness.....	1	2		
Shiftlessness and lack of employment.....			2	19
Shiftlessness and lawlessness.....			2	9
Shiftlessness and licentiousness.....	1	4		
Shiftlessness and neglect by natural supporters.....			1	6
Sickness.....	59	238	88	287
Sickness and desertion.....	3	8	2	8
Sickness and neglect.....			1	4
Sickness and old age.....	10	19	18	47
Sickness and shiftlessness.....	2	10	4	16
Theft.....			1	4
Unbalanced mind.....	1	1	1	1
No good cause shown.....			1	2
Total.....	220	796	548	2,218

In this list of deep-seated, persistent causes we find the non-financial or moral element figuring as it has figured in no previous comparison. It is true that sickness leads, as always, and lack of employment is responsible for much, but shiftlessness, desertion, intemperance, and licentiousness here answer for much more than has elsewhere been charged against them. As direct impelling causes of distress these moral, or as we might very well say, immoral, elements prevailed in hardly 5 per cent of all the cases; as contributory causes they prevailed in about 25 per cent of all the cases; but as the underlying cause of prolonged distress they prevail in a third of all the cases. As knowledge of a case becomes more comprehensive the greater does the relative importance of the moral element appear. A consideration, then, of the deeply seated causes of the poverty of these 768 families shows that in the final analysis the distress was due in one-third of the cases to moral elements, and in two-thirds of the cases to financial elements.^(a) The poverty of charity recipients would therefore seem to present a problem that is something less than one-third moral and something more than two-thirds economic. This at least is the conclusion drawn from the charity records in Washington.

^a In 49 cases the persistent cause was of a mixed nature containing both the financial and the moral elements. These were excluded in the above calculation.

SUMMARY.

The results of the study may be summarized as follows:

Material aid, consisting of money, food, and clothing, was given in 1905 to 1,256 families in all. The charity records of 1,183 of these families were taken as the basis of this study. The number of persons in these 1,183 families was 4,365. These recipients constitute the floating, unattached, isolated poor of the city. This isolation is seen in the fact that of the 1,775 wage-earners among the recipients only 23 of the 81 who reported on the subject stated that they belonged to labor organizations, and in only 40 families was there evidence of membership in fraternal or beneficial societies.

The average size of the charity family is 3.7 persons, as against an average of 4.9 persons of the District of Columbia. Excluding that large class of charity families consisting of only 1 person or only 2 persons, the average of the charity family is brought up to 5, a normal average. The charity family therefore is neither much larger nor much smaller than the prosperous family.

The number of children under 16 in the charity families was 47.7 per cent of the charity population, whereas this class of children in the District of Columbia at large constituted only 26.6 per cent of the population. Children under 10 constitute 30.9 per cent of the population of the charity families, while of the total population of the District only 16.8 per cent were under 10 years of age. In the District the excess of females over males among children under 16 was 3.2 per cent; in the charity families the excess was 18.3 per cent. Among children 10 or under 16 the excess of females over males in the charity population was 21.8 per cent, and in the District the excess was only 8.1 per cent. So in the charity families the number of helpless children was relatively great, and the excess in the number of female children was strikingly large.

In 12 per cent of all the families there was desertion. Counting only the families in which the husband and wife were both living, there was desertion in nearly 20 per cent of the cases. Desertion was found in 13 per cent of the white families in which there were both a husband and wife, and in 24.4 per cent of the colored families. In nearly 30 per cent of all the families either the husband or the wife was dead, and in 37.5 per cent of all the cases the family was without a male supporter at its head. The charity family is therefore very often a fatherless family. Divorce does not prevail to any appreciable degree among the charity receiving families.

Of all the persons in the charity families 16 years of age or over, 77.2 per cent were employed in gainful occupations. In the 271 white families in which both husband and wife were at home both husband and wife were gainfully employed in 95 cases, and in the 291

colored families having both a husband and a wife at home both husband and wife were employed in 222 cases. Extreme poverty has relatively a greater effect in drawing white married women into the ranks of wage-earners than it has in the case of colored married women. Of the children under 16 years of age in the charity families, 12 per cent were gainfully employed, a much larger percentage than obtained in the District at large.

On the charity roll many occupations are represented, although laborers, laundresses, and domestics comprised more than 60 per cent of all the chief wage-earners. Among the wage-earners in the families driven to charity were 27 carpenters, 25 painters, 10 plasterers, 9 clerks, 7 iron workers, 5 shoemakers, and 4 plumbers.

The actual earnings of a family receiving charity is a most difficult matter to determine, for at the time of charity seeking there is in most cases only financial chaos. In more than two-thirds of the families the wages of the chief wage-earner at the time of application had entirely ceased. In 80 families there was no wage-earner at all. Altogether three-fourths of the families were deprived of a regular breadwinner at the time of the application, a circumstance that *prima facie* at least indicates that the poverty of these poor is chiefly an economic or financial and not a moral problem.

In 78 families the chief wage-earner was earning the normal rate of wage at the time of application. In 269 cases the normal wage of the chief wage-earner was reported in dollars and cents. This normal daily wage varied from 8 cents a day to \$5 a day. In over two-fifths of the families in which the normal wages were definitely known the rate of the male worker ranged from \$1 to \$2 per day, the wage most often not exceeding \$1.50 per day. These workers were for the most part day laborers, some of them being employed on the streets of the city. In 206 of the families there was evidence of income additional to that derived from labor. In 43 cases pensions were received. With the exception of pensions the element of additional income was insignificant; when the regular earnings of the members of the family were cut off practically everything was gone.

Relief in 60 per cent of the cases consisted in giving food. Next to food, fuel was most frequently given. In nearly half the cases fuel was one of the articles given. The payment of rent does not figure largely in the relief extended, for the reason that the charity organization will seldom undertake to meet arrears in rent, and for the further reason that the applicants adopt the policy of getting the rent paid first and then going to the charity office for food and fuel. The real magnitude of the rent problem in the lives of these recipients is seen in the fact that 208 of the 1,183 families at some time and to some extent found arrears of rent associated with their appeal to charity. The chattel-mortgage loan figured in the distress of 26 families.

In two-thirds of the families there was no marked delinquency whatever. Of the 394 families tainted with delinquency 174 were white and 220 colored, these numbers representing 38 per cent of the total white families and 30 per cent of the total colored families, respectively. The leading delinquencies were intemperance, desertion, licentiousness, neglect by natural supporters, lawlessness, thievery, and mendicancy. In nearly one-third of all the families in which delinquency was visible intemperance was the evil. In 96 cases the intemperance was in the white families and in 32 cases in colored families. Next to intemperance is the vice of desertion. In 102 cases desertion occurred in colored families and in 42 cases in white families. Licentiousness is third on the list of delinquencies. This vice was discoverable in 17 white families and in 47 colored families. The evidence supporting the charge of licentiousness consisted in part of the presence of illegitimate children, of whom there were 11 in white families and 68 in colored families. Neglect by natural supporters—not including cases of outright desertion—occurred in 12 white families and 31 colored families. Akin to delinquency, but not included among the delinquencies, was a certain reliance upon charity, a certain inclination to pauperism. This spirit of dependence cropped out in 69 families, 40 of which were white and 29 colored.

When considering the causes of the distress of the recipients it was found practicable to avoid using the terms "inefficiency," "ignorance," and "irregularity of employment" to denote causation. The subject of regularity and irregularity of employment, however, received careful attention, and it was found that of the 1,051 cases in which it was possible to characterize the employment of the chief wage-earner as regular or irregular, 919 were irregular.

In the discussion of causes the expression "financial element" is used to include one or several or all of the following elements of causation: Insufficient earnings, lack of employment, sickness, accident, old age, and severe weather. In 28 families (20 white, 8 colored) the financial element did not enter at all into the explanation of the causes of distress.

Among the immediate causes of distress—those that impinged directly on the consciousness of the applicant and hurried him to the charity office—sickness figured in nearly one-half of the families, rheumatism and tuberculosis leading all the other diseases. Next to sickness, lack of employment was the immediate cause of most distress, more than one-third of all the cases being assigned to this cause. Third in the list of immediate causes stands insufficient wages. In 81 families the wages were so low that the family could not live upon the earnings, even though the full wage was being received at the time of the application. In 55 cases the immediate cause of distress was

due to accident. Illustrations of the circumstances attending these accidents show plainly enough the need of a liberal liability law. In 49 cases old age was the direct cause of the appeal to charity.

Sickness, lack of employment, insufficient wages, accident, and old age constituted 94 per cent of all direct causes. That is to say, in nineteen cases out of twenty the impelling cause of the application is directly referable to a financial factor.

In the immediate causes of 329 cases could be seen a full explanation of the distress. In 854 the immediate cause was supplemented by a contributory cause. As contributory causes sickness, insufficient earnings, lack of employment, and accident figure very much less than they did as immediate causes, while desertion, intemperance, and neglect by natural supporters figured very much more. Among the contributory causes there appear also certain causes that did not appear among the direct causes, such as licentiousness, shiftlessness, mendicancy, thievery. While the immediate causes were in the vast majority of cases due to financial adversity, the undercurrent of distress was strongly colored with moral delinquency—desertion, intemperance, licentiousness, neglect by natural supporters, mendicancy, and thievery constituting about 25 per cent of all the contributory forces. In 55 families the controlling cause of distress was put down as shiftlessness, a fault that was regarded as consisting in a failure to make the best of opportunities. In 79 cases severe weather operated as a contributing cause.

When studying the subject of underlying or persisting causes, it was convenient to classify the cases as temporary, intermittent, or permanent. More than one-third of the cases were found to be temporary, and in these, of course, no deep-seated cause was discernible. In 768 cases it was possible to assign a persistent or underlying cause of the poverty. Here the nonfinancial or moral element figured much more prominently than in any previous comparison. As direct impelling causes shiftlessness, desertion, intemperance, and licentiousness had to answer for hardly 5 per cent of all the cases. As contributory causes they prevailed in about 25 per cent of all the cases, but as the underlying cause of prolonged distress they prevailed in one-third of all the cases.

RECENT REPORTS OF STATE BUREAUS OF LABOR STATISTICS.

MAINE.

Twenty-first Annual Report of the Bureau of Industrial and Labor Statistics for the State of Maine, 1907. Thomas J. Lyons, Commissioner. 520 pp.

The following subjects pertaining to the labor interests of the State are presented in this report: Factories, mills, and shops built during 1907, 4 pages; labor unions, 95 pages; women and children in sardine factories, 17 pages; women wage-workers of Portland, 30 pages; school-teachers, 121 pages; opportunities for new industries, 172 pages; labor laws, 32 pages; report of the inspector of factories, workshops, mines, and quarries, 5 pages.

FACTORIES, MILLS, AND SHOPS BUILT.—Returns show that in 1907 in 95 towns 133 buildings were erected or enlarged, remodeled, etc., at a total cost of \$4,140,960. These improvements provided for 3,566 additional employees. A summary of improvements of this character is presented for the ten years 1898 to 1907:

FACTORIES, MILLS, AND SHOPS BUILT OR ENLARGED, ETC., DURING THE TEN YEARS 1898 TO 1907.

Year.	Number of towns.	Number of buildings.	Aggregate cost.	New employees.
1898.....	64	72	\$675,100	2,024
1899.....	103	138	6,800,700	4,990
1900.....	114	167	2,174,325	5,539
1901.....	94	121	5,638,300	6,337
1902.....	91	129	2,776,930	5,017
1903.....	96	124	1,436,970	3,343
1904.....	91	113	1,175,500	3,276
1905.....	93	114	2,303,410	3,329
1906.....	104	131	2,637,500	3,674
1907.....	95	133	4,140,960	3,566

LABOR UNIONS.—Under this title is given a list of all federations and unions reporting, together with the addresses of the secretaries. There were 2 state and 11 central federations and 225 local unions in 68 cities, towns, and plantations. Of the local unions known to exist in 1907, 4 failed to report membership and 5 sent no report. The reports from the unions give, by cities and towns, the date of organization, membership, qualifications for membership, initiation fees, dues, benefits allowed, hours of labor, rates of wages, etc.

The 215 local unions reporting comprised an aggregate membership of 16,804. Compared with 1906, a net gain of 10 unions is shown and

a gain in reported membership of 2,032. There were 117 unions which reported that they were working under trade agreements with employers and 100 which were not.

To the question, "What have you accomplished for labor by organization?" a wide range of replies was returned by the unions; but a majority of them asserted that higher wages and a shorter workday, as well as improved working conditions and social benefits, had been gained. To the question, "Do nonunion men enjoy the same conditions as to labor, wages, and steady employment as union men?" 172 unions made reply, 69 indicating that nonunion men enjoy equal conditions with union men and 103 that they do not.

Under this chapter is also given historical sketches of the Granite Cutters' International Association of America and the Lobster Fishermen's National Protective Association (national organizations originating in Maine), together with an account of the labor demands and differences occurring in the State during the year.

WOMEN AND CHILDREN IN SARDINE FACTORIES.—This chapter is devoted to the industrial conditions surrounding the women and children employed in the sardine packing factories of Washington County, the principal center of the industry. The pounds of sardines packed in the State in 1905 amounted to 86,218,610, or 98.8 per cent of the total pounds for the United States, and were valued at \$4,291,324. The report briefly describes the workings of the various stages of the industry in addition to considering living expenses, wages, and hours of employment, the irregular nature of the work (as everything depends upon "the catch"), and other employment available when the packing season closes. The 30 sardine factories within the towns of Eastport and Lubec employed in the canning of fish during the 1906 season over 1,600 women and children. Of this number about two hundred were children of various ages, one-half of whom were probably under 14 years of age. The work is mostly paid for by the piece.

WOMEN WAGE-WORKERS OF PORTLAND.—The purpose of this report is to present facts pertaining to the lines of work in which women are numerously employed in the city of Portland, together with figures showing the average financial returns and the cost of living, and an account of representative societies which are the outgrowth of existing business and industrial conditions. All occupations, both of an industrial and clerical nature, in which women are employed are considered, the number of women finding employment in each, with the weekly wages paid, being given. For most of the industrial occupations hours of labor are also given. According to the United States census of 1900 there were employed in the city of Portland 5,531 women wage-earners. During the years since then the number has largely increased. Tenement houses, child labor, and night

schools are also given consideration in addition to the welfare work of various establishments of the city and of different societies and organizations.

SCHOOL TEACHERS.—This presentation consists of letters, arranged by counties, from school superintendents and school teachers throughout the State giving personal expression respecting existing conditions in the public schools and the necessity for higher salaries than are at present paid, especially in the rural and village schools. In addition, there are given compilations of 1,100 returns from rural and village teachers, out of over 1,600 returns which were received from teachers of all grades. These 1,100 returns from teachers are grouped, by counties, in four classes—rural schools taught by female teachers with no normal training and with normal training; village schools taught by female teachers with no normal training and with normal training—and give statistics as to salaries, living expenses, length of school year, number of years they had been engaged in teaching, number of years they had attended high schools or academies, etc. These returns are summarized in the statement which follows:

STATISTICS OF TEACHERS IN RURAL AND IN VILLAGE SCHOOLS.

Items.	Female teachers, with no normal training, in—		Female teachers, with normal training, in—	
	Rural schools.	Village schools.	Rural schools.	Village schools.
Number of teachers.....	464	222	210	204
Average length of school year.....	29 wks., 1 da.	31 wks., 4 da.	29 wks., 0 da.	32 wks. 3 da.
Average weekly wages.....	\$6.70	\$8.04	\$7.21	\$9.71
Average gross salary.....	\$196.21	\$284.29	\$209.09	\$316.55
Average weekly cost of board.....	\$2.30	\$3.06	\$2.31	\$3.29
Average cost of board for school year.....	\$64.24	\$97.31	\$66.99	\$106.25
Average incidental expenses.....	\$16.81	\$25.95	\$16.14	\$24.56
Average net salary.....	\$115.16	\$161.03	\$125.96	\$185.74
Average weekly income on the basis of 52 weeks in the year.....	\$3.77	\$5.47	\$4.02	\$6.09

Of the 1,100 teachers in rural and village schools, both with and without normal training, 559, or 50.8 per cent, remained at home during vacations, and 541, or 49.2 per cent, supplemented their incomes by other gainful occupations. Of the 541 at work, 283, or 52.3 per cent, were engaged in hotel and house work, and 258, or 47.7 per cent, in other avocations.

OPPORTUNITIES FOR NEW INDUSTRIES.—This presentation, which is arranged by counties, towns, and plantations, is designed to show as far as possible the nature and extent of the industrial opportunities of the State as yet undeveloped and the advantages each town has to offer in the way of new business openings. There is also given the number of towns which contain a good supply of various specified natural products, together with a list of the industries

wanted, or those best suited to the several towns, which are named under each industry.

LABOR LAWS.—This section of the report reproduces the labor laws of the State, compiled from the Revised Statutes for 1903 and from the public laws of 1905 and 1907.

CHILD LABOR.—In the report on factory inspection a table is presented in which it is shown that the number of children working under certificates in certain manufacturing establishments of the State was 877 in 1906 and 1,111 in 1907. The legislature in 1907 made some changes in the law regulating the employment of children in manufacturing and mechanical establishments, the most important of which was fixing the age limit at 14 years, with no chances of excuse coming from any source. Also, the form of the employment certificate was changed.

MICHIGAN.

Twenty-fifth Annual Report of the Bureau of Labor and Industrial Statistics, including the Fifteenth Annual Report of State Inspection of Factories. 1908. Malcolm J. McLeod, Commissioner. xxi, 539 pp.

This report contains 19 chapters, of which Chapters I to IX, 325 pages, are devoted to inspection of factories, stores, hotels, tenement shops, etc. Labor and industrial statistics are presented in Chapters X to XIX under the following titles: Technical papers, 28 pages; report of the state commissioner of labor to the International Association of Factory Inspectors, 5 pages; labor disagreements, 1907, 9 pages; statistics of penal and reformatory institutions, 16 pages; miscellaneous industries, 19 pages; beet-sugar and Portland-cement industries, 13 pages; the coal industry, 21 pages; furniture, boot and shoe, corset, and refrigerator industries, 19 pages; free employment bureaus, 22 pages; statistics of electric railways and of the motive power used in manufacturing in Michigan, 17 pages; laws coming under the jurisdiction of the state bureau of labor, 30 pages.

TECHNICAL PAPERS.—Under this title two papers are presented. The first paper, "What our labor laws need to make us proud," discusses in reference to the state child labor, legislation affecting working women, guarding of dangerous machinery, mining laws, factory inspectors, employment bureaus, etc. The second paper deals with the subject "Cost of living, wages, and rising prices." Comparisons are made between the years 1907 and 1902, and also between earlier years, of income and expenditure that enter into the living of the average workingman's family. The cause of rising prices is attributed, by the author of the paper, to the increase in the world's output of gold rather than to the influence of trusts.

LABOR DISAGREEMENTS, 1907.—The report of the work of the state court of mediation and arbitration for the year 1907 in dealing with 11 labor disagreements is given in this chapter.

PENAL AND REFORMATORY INSTITUTIONS.—Under this title appear the reports of the wardens and superintendents of these institutions. Tables are given showing the number of officials and salary of each, number of inmates, cost of clothing, and feeding of inmates, number of inmates employed at contract labor, rate per day of contract labor, and hours of labor, and number of inmates employed in systems of labor other than contract.

MISCELLANEOUS INDUSTRIES.—The statistical information contained in this chapter is reproduced from the reports of the United States Census Bureau, and covers 15 industries of the State. In addition to data for 1905, the presentation gives for 10 of the 15 industries comparative figures for 1900.

BEET SUGAR AND PORTLAND CEMENT INDUSTRIES.—In the beet-sugar industry 16 factories were in operation during the year 1907, the same number as in 1906. These 16 factories represented a total cost of \$10,700,000. The acreage devoted to beet raising in 1907 was 99,586, an increase over 1906 of 3,069 acres. The tons of beets grown in 1907 were estimated at 723,880, and the pounds of sugar made at 165,074,900. There were 1,495 skilled laborers and 2,306 other laborers employed in the factories, with an average daily wage of \$2.93 for the former, and of \$1.86 for the latter.

In the cement industry 15 of the 17 plants in the State were in operation at the time of the investigation. The aggregate cost of the plants in operation was \$8,320,000, and their aggregate daily capacity 19,160 barrels. The output for 1907 was 3,644,473 barrels. There were on the pay rolls 609 skilled laborers, at an average daily wage of \$2.84, and 1,253 other laborers, at an average daily wage of \$1.85. The average daily wage of all employees was \$2.17, and the annual wage pay roll amounted to \$1,365,960.

THE COAL INDUSTRY.—In this industry there were 34 coal mines in operation during the year 1907, as compared with 38 mines during the year 1906. A condensed summary of the operations of the mines for the two years is presented in the following table:

COAL MINE STATISTICS, 1906 AND 1907.

Items.	Year.	
	1906.	1907.
Mines in operation.....	38	34
Average number of employees.....	2,119	2,881
Average hours worked per day.....	7.8	8
Average days worked per month.....	22.3	20.4
Average daily wages.....	\$2.40	\$3.24
Tons of coal mined.....	1,372,854	1,898,426
Average cost of mining per ton.....	\$1.50	\$1.64

A personal canvass was made of 2,023 miners, employed in 24 mines, of which 1,300 were married and 723 were single. There were 1,138 of the miners who had 5,051 others besides themselves to support. The average daily wages of the miners canvassed was \$3.11. As to nationality, 50 per cent of the miners were American or English born; those foreign born had lived in the United States an average of 22½ years.

In 19 mines 54 accidents were reported—7 fatal, 7 serious, 27 severe, and 13 slight.

FURNITURE, BOOT AND SHOE, CORSET, AND REFRIGERATOR INDUSTRIES.—These four industries were the subjects of a special canvass made in 1907.

In the investigation of the furniture industry 150 establishments (in 40 towns) were visited, the establishments representing an invested capital of \$13,802,402. They employed 16,310 adult males, at an average daily wage of \$1.92; 513 adult females, at an average daily wage of \$1.40; 542 boys between 14 and 16 years of age, at an average daily wage of \$1.10; and 61 girls between 14 and 16 years of age, at an average daily wage of \$0.80. The cost of material used by the factories aggregated \$11,801,370 and the value of product \$26,662,414.

Seventeen establishments engaged in the manufacture of shoes (in 11 towns) were canvassed, the establishments representing an invested capital of \$1,901,400. They employed 1,413 adult males, at an average daily wage of \$1.85; 815 adult females, at an average daily wage of \$1.18; 126 boys between 14 and 16 years of age, at an average daily wage of \$0.84; and 111 girls between 14 and 16 years of age, at an average daily wage of \$0.67. The cost of material used aggregated \$3,176,945 and the value of the product \$6,176,771.

Seven establishments engaged in the manufacture of corsets (in 4 towns) were canvassed. They employed 257 adult males, at an average daily wage of \$2.25, and 1,081 adult females and 176 females under 16 years of age, at an average daily wage of \$1.10. The cost of material used aggregated \$1,225,500 and the value of product \$2,457,880.

Ten establishments engaged in the manufacture of refrigerators (in 9 towns) were canvassed. They employed 1,596 adult males, at an average daily wage of \$1.69, and (in 5 factories) 58 boys under 16 years of age, at an average daily wage of \$0.92. The cost of material used aggregated \$1,483,126 and the estimated value of product \$2,739,662.

FREE EMPLOYMENT BUREAUS.—Under this title is presented a detailed report of the work done in the four free employment bureaus of the State. Two of the bureaus (one at Saginaw and one at Kalamazoo) were opened during 1907. The following table summarizes

the work done at the Detroit and Grand Rapids bureaus for the year ending November 30, 1907, at the Saginaw bureau for the period July 19 to November 30, 1907, and at the Kalamazoo bureau for the period August 7 to November 30, 1907:

OPERATIONS OF FREE PUBLIC EMPLOYMENT OFFICES.

City.	Situations wanted.		Help wanted.		Positions secured.	
	Males.	Females.	Males.	Females.	Males.	Females.
Detroit.....	9,831	1,581	10,363	2,007	9,831	1,581
Grand Rapids.....	4,172	2,553	3,933	3,202	3,465	2,346
Saginaw.....	1,234	294	1,510	406	878	214
Kalamazoo.....	800	250	452	267	379	140
Total.....	16,037	4,687	16,258	5,882	14,553	4,281

ELECTRIC RAILWAYS.—In 1907 there were 23 electric railways in Michigan, with a total invested capital of \$38,031,000, and paying in wages to 6,534 employees the sum of \$4,692,762. The statement following gives the number of employees connected with these railways, together with their average daily wages and daily hours of work:

NUMBER, HOURS OF LABOR, AND DAILY WAGES OF ELECTRIC RAILWAY EMPLOYEES, 1907.

Occupation.	Number of employees.	Average daily hours of labor.	Average daily wages.
Division superintendents.....	16	.....	\$3.55
Assistant division superintendents.....	24	.....	2.60
Foremen.....	71	.....	2.35
Office employees.....	324	9	1.66½
Conductors.....	1,405	9½	2.21
Motormen.....	1,399	10	2.20½
Electricians.....	90	10	2.28
Engineers.....	43	10½	2.94
Firemen.....	74	10	1.96
Others.....	44	11	2.11
Linemen.....	75	10½	2.22
Motor inspectors.....	148	10	2.07
Machinists.....	38	10	2.42
Carpenters.....	99	9	2.28
Painters.....	55	10	2.15
Car-house men.....	210	10½	1.73
Track laborers.....	2,280	10	1.74½
Other employees.....	139	10	1.52

POWER USED IN MANUFACTURING IN MICHIGAN.—Of the 8,335 manufacturing establishments embraced in this presentation 3,327 used steam power, 1,478 used electric power, 924 used gas or gasoline power, 270 used water power, 372 used rented power (kind not reported), and 1,964 establishments required no power to operate. The total power generated in the 6,371 power-using establishments was 906,979 horsepower. Also, statistics are given of steam boilers and their equipment and kind of alarms in use and their condition. The data in detail are presented by counties.

NEW JERSEY.

Thirteenth Annual Report of the Bureau of Statistics of Labor and Industries of New Jersey, for the year ending October 31, 1907.
Winton C. Garrison, Chief. xiv, 675 pp.

This report consists of 4 parts, in which the following subjects are presented: Statistics of manufactures, 123 pages; steam railroads, 12 pages; cost of living, 17 pages; fruit and vegetable canning, 10 pages; New Jersey as a manufacturing State, 33 pages; economic changes in the building trades of Essex County, 60 pages; historical review of the bureau of statistics of labor and industries, 40 pages; industrial chronology, 369 pages.

STATISTICS OF MANUFACTURES.—This presentation of the statistics of manufactures is based on returns for the year 1906, secured from 2,120 establishments, 2,039 representing 88 specified industries and 81 grouped as unclassified. None of the establishments considered employed fewer than 10 persons or had an invested capital of less than \$5,000. The facts are set out in ten tables, which show by industries character of establishment management (whether corporate or private), amount of capital and the various forms in which it is invested, value of stock or materials used and of goods produced, number of wage-earners (men and women, and children under 16 years of age) and wages and earnings, days in operation during the year and hours worked per day and per week, percentage of business done of total productive capacity, and character and measure of power used.

The returns show that of the 2,120 establishments reporting 1,326 (in 1,321 of which were 71,876 stockholders) were under the corporate form of ownership and management and 794 (with 1,407 partners and proprietors) were owned and managed by partnerships and private individuals. Capital invested (by 2,113 establishments) showed an aggregate of \$579,705,607, value of materials or stock used (by 2,115 establishments) an aggregate of \$428,030,730, and value of products or goods made (by 2,111 establishments) an aggregate of \$705,489,666. The total paid out in wages amounted to \$131,587,332. During the year there was an average of 260,072 wage-earners employed, 191,208 males 16 years of age or over, 62,189 females 16 years of age or over, and 6,675 children under 16 years of age. Under normal conditions the average number of hours worked per day in the 2,120 establishments was 9.58, and the average number of hours worked per week 55.32. The average number of days in operation during the year was 289.02, and the average proportion of business done of total productive capacity was 78.22 per cent.

The table following presents the number and per cent of males and females 16 years of age or over and of children under 16 years

of age employed in 1906 in all industries (2,120 establishments) at each specified weekly rate of wages:

NUMBER AND PER CENT OF MALES AND FEMALES 16 YEARS OF AGE OR OVER AND OF CHILDREN UNDER 16 YEARS OF AGE IN ALL INDUSTRIES (2,120 ESTABLISHMENTS), RECEIVING EACH CLASSIFIED WEEKLY RATE OF WAGES, 1906.

Classified weekly wages.	Number.				Per cent.			
	Males 16 years of age or over.	Females 16 years of age or over.	Children under 16 years of age.	Total.	Males 16 years of age or over.	Females 16 years of age or over.	Children under 16 years of age.	Total.
Under \$3.....	1,212	1,712	1,028	3,952	0.6	2.6	14.3	1.4
\$3 or under \$4.....	3,224	4,565	3,128	10,917	1.5	6.8	43.6	3.8
\$4 or under \$5.....	6,004	10,146	2,088	18,238	2.8	15.2	29.1	6.3
\$5 or under \$6.....	7,183	12,603	731	20,517	3.4	18.9	10.2	7.1
\$6 or under \$7.....	8,675	12,088	158	20,921	4.0	18.1	2.2	7.3
\$7 or under \$8.....	12,800	8,761	36	21,597	6.0	13.1	.5	7.5
\$8 or under \$9.....	18,380	5,673	10	24,063	8.6	8.5	.1	8.4
\$9 or under \$10.....	31,528	4,309		35,837	14.7	6.5		12.5
\$10 or under \$12.....	33,541	3,917		37,458	15.7	5.9		13.0
\$12 or under \$15.....	34,838	2,280		37,118	16.3	3.4		12.9
\$15 or under \$20.....	38,312	564		38,876	17.9	.9		13.5
\$20 or under \$25.....	11,240	87		11,327	5.2	.1		3.9
\$25 or over.....	6,977	11		6,938	3.3			2.4
Total.....	213,914	66,716	7,179	287,809	100.0	100.0	100.0	100.0

The following comparative table shows for selected industries, for the years 1905 and 1906, the average number of persons employed per industry and the average yearly earnings per employee:

AVERAGE NUMBER OF EMPLOYEES PER INDUSTRY AND AVERAGE YEARLY EARNINGS PER EMPLOYEE, 1905 AND 1906, BY INDUSTRIES.

Industry.	Average employees per industry.		Average yearly earnings per employee.	
	1905.	1906.	1905.	1906.
Artisans' tools.....	2,037	2,445	\$543.17	\$585.24
Boilers, steam.....	2,249	1,996	472.18	629.14
Brewery products.....	1,964	2,065	894.37	898.31
Brick and terra cotta.....	6,742	7,419	448.40	469.02
Chemical products.....	6,546	6,839	487.49	513.49
Cigars and tobacco.....	7,223	8,376	316.70	294.78
Drawn wire and wire cloth.....		1,867	541.00	596.21
Electrical appliances.....	5,462	6,739	510.23	519.52
Furnaces, ranges, and heaters.....	1,885	1,915	659.50	698.32
Glass, window and bottle.....	6,263	6,190	539.97	569.60
Hats, men's.....	5,563	5,832	586.47	581.53
Jewelry.....	3,091	3,482	645.97	682.31
Leather, tanning and finishing.....	5,616	5,722	523.60	617.59
Lamps, electric and other.....	2,042	2,317	401.71	433.75
Machinery.....	19,154	24,393	599.06	631.37
Metal goods.....	5,654	6,751	471.95	450.45
Oils.....	3,633	3,753	635.67	644.10
Paper.....	2,287	2,419	497.34	502.27
Pottery.....	4,646	4,833	593.91	629.95
Rubber products, hard and soft.....	5,761	6,280	480.11	489.76
Shipbuilding.....	3,523	3,822	568.89	677.56
Silk goods, broad and ribbon.....	22,456	21,543	438.54	434.72
Steel and iron, structural.....	3,295	3,429	598.08	627.34
Steel and iron, forging.....	2,569	2,882	615.10	649.35
Woolen and worsted goods.....	8,531	8,965	373.43	385.30
Twenty-five industries.....	138,242	152,274	511.06	534.42
Other industries.....	100,871	107,798	456.58	465.76
All industries.....	239,113	260,072	488.49	505.96

STEAM RAILROADS.—For the year ending June 30, 1907, the 7 railroads in the State employed 45,810 persons for an average of 292 days per person, each working an average of 10.6 hours per day. The total paid in wages amounted to \$28,987,303, the average wages per day being \$2.17 and the average yearly earnings per employee \$632.99. Five of the companies reported the number of employees injured during the year as 1,567, the injuries of 90 resulting in death.

COST OF LIVING.—This is a continuation of the presentation of previous years, and shows the retail prices of 50 items of food and 2 other commodities (common soap and kerosene oil) in the principal markets in all counties of the State in the month of June, 1907. Comparisons with retail prices in 1906 and in 1898 (the year the investigation was begun) are also given. Taking the list of commodities together, the prices in 1907 as compared with the prices in 1906 show an increase of 9.7 per cent, which is the largest increase in the cost of living shown by the records of any one year since the annual cost of living inquiry was begun, in 1898. The total net increase, however, was largely due to advances in the price of first and second quality flour per 25-pound bag and in the price of new and old potatoes per bushel. Apart from these 4 items the remaining 46 articles of food show an advance in 1907, as compared with 1906, of only 2.9 per cent.

FRUIT AND VEGETABLE CANNING.—In 1906 there were 44 canneries from which returns were received. Invested capital to the amount of \$920,045 and wages paid to the amount of \$341,883 were reported by the canneries. The 44 canneries gave employment to 4,865 wage-earners—2,121 males and 2,744 females. The selling value of the product amounted to \$1,581,418.

NEW JERSEY AS A MANUFACTURING STATE.—A brief historical review of the growth of the manufacturing industries of the State for the fifty-five-year period 1850 to 1905 is presented in this section. The capital invested in manufactures in 1850 was \$22,293,258, as contrasted with \$715,060,174 in 1905; the number of wage-earners in 1850 was 37,830, as contrasted with 266,336 in 1905; the amount paid in wages in 1850 was \$9,364,740, as contrasted with \$128,168,801 in 1905, and the total value of the manufactured product in 1850 was \$39,851,256, as contrasted with \$774,369,025 in 1905.

ECONOMIC CHANGES IN THE BUILDING TRADES.—The purpose of this inquiry was to ascertain what changes had taken place in wages and working hours during the period between the years 1896 and 1906, and incidentally how far rents for the different classes of buildings had been affected thereby. The field of inquiry was limited to Essex County, and the information presented was derived entirely from statements made by employers who had been in business, with but one exception, for periods ranging from 8 to 40 years. The trades or occupations considered are 15 in number. The questions

submitted were designed to bring out the fullest information possible relating to the comparatively new form of business organization that has resulted from the almost complete unionization of the building trades.

Relative to rents, the inquiry led to the conclusion that, fundamentally, the general advance may be safely said to be due to the general and widely diffused prosperity of recent years, which has created a desire for better homes, the supply of which, partly by reason of large increases in the cost of land, material, and labor, has not as yet been sufficient to meet the demand. These circumstances, together with a rapidly growing population competing for homes, account fully for the advance in rents.

BUREAU OF STATISTICS OF LABOR AND INDUSTRIES.—Under this title is presented a historical review of the work of the various state bureaus of labor statistics, with special reference to and detail of that of the New Jersey bureau, which has had an organization for thirty years.

INDUSTRIAL CHRONOLOGY.—This record is for the year ending September 30, 1907. During the period there were 581 corporations organized in the State for industrial purposes, having an aggregate capitalization of \$88,750,500; 165 new buildings were erected and equipped for manufacturing purposes and 156 old plants more or less enlarged; 10 manufacturing plants were moved into New Jersey from other States (6 from New York and 4 from Pennsylvania); 18 manufacturing plants were permanently closed and 35 closed for a period ranging from two weeks to one month or over; 117 plants suffered from fire, some being totally destroyed, the losses of 108 reporting that item amounting to \$2,217,717, all but a small part of which was covered by insurance; there were 149 instances in which employees received an increase in wages (ranging from 2½ to 15 per cent), and 4 firms reduced the hours of weekly labor (five hours in 2 cases and three hours in 2 cases); 1,898 wage-earners (440 being railroad employees) were injured while at work, of which number 425 (180 being railroad employees) died from the injuries received; 162 strikes of greater or less duration occurred, 84 being for increase in wages, 4 for reduction of working hours, 12 for increase of wages and reduction of working hours combined, 11 against the employment of non-union men, 7 for the reinstatement of discharged union men, and the remainder for various other causes. There were 34 new labor unions organized during the chronological period covered. In addition to these there was 1 organization of women formed for the purpose of assisting, as far as possible, all labor unions and the members thereof by pledging themselves to buy only such goods as are the products of union labor and to prevail upon their friends to do likewise.

OHIO.

Thirty-first Annual Report of the Bureau of Labor Statistics of the State of Ohio, for the year 1907. M. D. Ratchford, Commissioner.
523 pp.

This report consists of four parts in which are presented the following subjects: Laws governing the bureau, laws to license and regulate private employment agencies, and recent court decisions, 13 pages; manufactures, 444 pages; coal mining, 20 pages; free public employment offices, 18 pages; chronology of labor bureaus, 3 pages.

MANUFACTURES.—Tables are given for 1906, showing, by industries, for each of the five principal cities, the remaining cities and villages, and totals for the State, the number of establishments reported, capital invested, value of goods manufactured, amount paid for rent, taxes, and insurance, total amount paid in wages, number and monthly pay of salaried employees, number of male and of female wage-earners, number employed by occupations, and average number of days worked, average daily wages, average yearly earnings, and average hours of daily labor. Other tables show, by industries, the number in each occupation affected by a change of wages during the year.

The 9,337 establishments from which returns were received for 1906 reported an invested capital of \$494,559,455, and goods produced or manufactured to the value of \$1,008,535,149.22. Wages paid 358,292 males and 66,140 females, or a total of 424,432 wage-earners, aggregated \$219,039,431.58, and salaries aggregating \$44,240,675.16 were paid to 38,878 persons employed as superintendents, office help, etc. During the year 113,014 employees received an average increase in wages of 8.7 per cent, and 8,702 employees suffered an average reduction in wages of 5.2 per cent.

The number of establishments reporting in 1906 was 823 more than in 1905, the value of manufactured products was \$134,836,655.62 more than that of 1905, and the amount paid in wages during the year was increased by \$29,062,032.35. The aggregate invested capital exceeded that reported for 1905 by \$44,857,267, and the salaries paid superintendents, office help, etc., showed an increase of \$5,732,229.

COAL MINING.—Tables are given, by counties, showing number of mines reporting, average number of employees, capital invested, value of production, wages and salaries paid, average daily wages, average yearly earnings, average days worked, average hours of daily labor, number in each occupation affected by a change of wages during the year, etc. The following comparative table presents a summary of mining statistics for the years 1905 and 1906:

STATISTICS OF COAL MINING, 1905 AND 1906.

Items.	1905.	1906.	Increase (+) or decrease (-).
Number of mines reporting.....	587	574	— 13
Number of employees.....	a 37,673	b 42,080	+ 4,407
Number of salaried employees.....	970	953	— 17
Invested capital.....	\$36,630,252.00	\$35,761,855.00	— \$868,397.00
Value of product.....	\$24,986,266.90	\$26,864,427.70	+ \$1,878,160.80
Amount paid for rent, taxes, and insurance.....	\$610,508.94	\$611,116.79	+ \$607.85
Amount paid in wages.....	\$18,872,894.72	\$19,467,843.63	+ \$594,948.91
Amount paid in salaries.....	\$973,388.40	\$989,840.76	+ \$16,452.36
Average days worked per employee.....	173	171	— 2
Average daily wages per employee.....	\$2.48	\$2.61	+ \$0.13
Average yearly earnings per employee.....	\$429.04	\$446.31	+ \$17.27
Average hours of daily work.....	8	8	—
Number affected by advance in wages.....	164	40,634	+ 40,470
Number affected by reduction in wages.....	2	—	— 2
Average per cent advance in wages.....	8.9	5.7	— 3.2
Average per cent reduction in wages.....	13.2	—	— 13.2

a Average for the year, taken from monthly returns.

b Number for the year, taken from yearly returns.

FREE PUBLIC EMPLOYMENT OFFICES.—In addition to a text report and an itemized statement of the expenses of each of the five offices for the year ending October 31, 1907, tables are given showing, by years, the results of the operations of each office from date of organization, and for each week of the period October 26, 1906, to October 31, 1907.

The following table shows the operations of the five free public employment offices of the State for the period October 26, 1906, to October 31, 1907:

OPERATIONS OF FREE PUBLIC EMPLOYMENT OFFICES, OCTOBER 26, 1906, TO OCTOBER 31, 1907.

City.	Situations wanted.		Help wanted.		Positions secured.	
	Males.	Females.	Males.	Females.	Males.	Females.
Cleveland.....	4,935	3,274	6,894	4,370	4,703	3,151
Columbus.....	2,462	2,442	4,863	3,605	2,353	2,364
Cincinnati.....	4,030	1,989	3,724	2,268	3,661	1,679
Dayton.....	4,215	2,778	4,211	5,146	3,720	2,719
Toledo.....	3,223	1,782	4,850	2,220	2,767	1,425
Total.....	18,865	12,265	24,542	17,607	17,204	11,338

Since the organization in 1890 of the five free public employment offices there has been a total of 464,109 applications for situations wanted, 434,396 applications for help wanted, and 292,627 positions secured. Of applications for situations 63.1 per cent were filled, and of applications for help 67.3 per cent were filled.

The expenses of the five offices for the year ending October 31, 1907 (excluding salaries), were \$2,292.90, of which the expenses of the Cleveland office were \$507.37, the Columbus office \$340.78, the Cincinnati office \$507.05, the Dayton office \$511.67, and the Toledo office \$426.03.

RECENT FOREIGN STATISTICAL PUBLICATIONS.

CHILE.

La Oficina de Estadística del Trabajo. Ministerio de Industria i Obras Publicas. 75 pp.

The Chilean ministry of industry and public works publishes in this report an account of the creation and initiatory work of the office for the collection of labor statistics, which has recently been organized as a branch of that executive department. The pamphlet comprises three chapters, the first of which is devoted to a consideration of the disturbed economic and industrial conditions resulting from the earthquake of August 16, 1906, which occasioned a considerable advance in the cost of living and a general scarcity of labor due to the greatly increased activity in the building industry following that catastrophe. The chapter also enumerates the various measures employed by the minister of industry and public works in furtherance of his plan for the organization of a bureau of labor statistics, and includes the draft of a law providing for such an office, which was submitted to the Chilean Congress on January 16, 1907, but upon which no action was taken.

The second chapter gives an account of the creation by ministerial decree of April 5, 1907, of a bureau within the ministry of industry and public works with the following functions, the task of organization being delegated to the chief of the division of agricultural statistics:

To collect, classify, and publish information relating to labor, particularly that employed in industrial establishments; to inquire into the number and class of operatives employed in each industry and the number and class of those whom the development of each industry would require; to ascertain the wages paid to workingmen, estimated by the day and by the hour; to collect information in regard to accidents to labor; to study the length of the working day and the general condition of employment; to investigate the cost of workingmen's houses; and to undertake such other investigations as the Government may desire to commit to its charge.

A circular requesting information concerning the principal subjects enumerated in the decree was addressed to the chief officials of the several provinces and departments comprising the Republic, and from returns received tables were prepared which show for those subdivisions the number of persons employed in industrial establishments, the average daily wages paid in various occupations and industries during the months of November and December, 1906, in

some instances figures for 1903 being also given by way of comparison. From the information thus collected the total number of persons industrially employed is estimated at 43,044.

Copies of the blanks used in the collection of the data, together with the correspondence relating to that and other matters concerning the work of the bureau, are reproduced in the report.

The last chapter contains a discussion of the organization and functions of bureaus of labor statistics in other countries and a brief statement of the usefulness and importance of the Chilean bureau.

ITALY.

I Lavoratori delle Miniere. Ministero di Agricoltura, Industria e Commercio. Ufficio del Lavoro. Parte Prima, 287 pp. 1907.

This report presents the results of an investigation into the condition of the employees in the mines and quarries of Italy, undertaken in 1906, by the bureau of labor of the ministry of agriculture, industry, and commerce at the request of the Mine Labor Congress of 1904. The superior council of labor in the same year expressed its approval of such a study. The topics discussed are the age, conjugal condition, days lost on account of sickness, daily wages, and occupations of the workers.

According to data published in the annual mineral statistics for 1905, the total number of persons in the Kingdom in 1905 employed in mining was 63,996 and in quarrying 59,342.

The age grouping of employees in mines and quarries is shown in the following table:

PER CENT OF EMPLOYEES IN MINES AND IN QUARRIES IN EACH AGE GROUP, AT THE BEGINNING OF 1906.

Industry.	Number of employees.	Per cent of employees—						
		15 years of age or under.	16 to 21 years of age.	22 to 30 years of age.	31 to 40 years of age.	41 to 50 years of age.	51 to 60 years of age.	Over 60 years of age.
Mining.....	53,795	6.1	22.1	25.8	21.1	15.1	7.5	2.3
Quarrying.....	11,646	4.5	18.5	23.2	22.1	17.2	10.1	4.4

The largest percentage of workers in mining is shown to be between the ages of 22 and 30, with a rapid decrease in the number of workers in the higher ages. In quarrying the distribution among the groups is more uniform, but also shows the same general features.

The following table shows the results of the investigation in regard to the conjugal condition of the workers in the two industries:

CONJUGAL CONDITION OF EMPLOYEES IN MINES AND IN QUARRIES, BY AGE GROUPS, AT THE BEGINNING OF 1906.

Age group.	Employees in mines.				Employees in quarries.			
	Num-ber.	Per cent of—			Num-ber.	Per cent of—		
		Single.	Married.	Wid-owed.		Single.	Married.	Wid-owed.
15 years or under.....	3,161	100.0			572	100.0		
16 to 21 years.....	11,116	96.6	3.4		2,144	95.2	4.7	0.1
22 to 30 years.....	12,582	60.6	39.1	0.3	2,705	47.6	51.6	1.8
31 to 40 years.....	10,375	19.3	79.4	1.3	2,579	11.8	86.6	1.6
41 to 50 years.....	7,514	10.0	87.1	2.9	2,008	8.1	88.8	3.0
51 to 60 years.....	3,765	7.4	87.2	5.4	1,184	6.5	86.9	6.6
Over 60 years.....	1,182	5.8	83.5	10.7	515	5.8	81.9	12.2
Total.....	49,695	49.5	49.0	1.5	11,707	38.1	59.5	2.3

The table indicates that there is an apparent tendency for marriage to occur earlier in life among the quarry workers than among the mine workers.

The number of working days lost on account of sickness during the year 1905 by the mine and quarry workers is as follows:

AVERAGE NUMBER OF EMPLOYEES IN MINES AND IN QUARRIES AND AVERAGE NUMBER OF WORKING DAYS LOST PER EMPLOYEE ON ACCOUNT OF SICKNESS, BY AGE GROUPS, 1905.

Age group.	Employees in mines.		Employees in quarries.	
	Number.	Average days lost.	Number.	Average days lost.
15 years or under.....	1,964	3.7	185	7.9
16 to 21 years.....	7,581	4.6	705	7.9
22 to 30 years.....	9,114	6.0	906	7.8
31 to 40 years.....	7,479	6.7	890	8.6
41 to 50 years.....	5,363	6.9	765	9.0
51 to 60 years.....	2,577	9.5	437	13.6
Over 60 years.....	800	9.3	206	10.2
Total.....	34,898	6.2	4,094	9.0

While the total number of quarry workers investigated is much smaller than the number of mine workers, the data may, however, be regarded as representative. According to the preceding table, the rate of sickness is uniformly higher for quarry workers for each of the age groups. For both the mine and the quarry workers there is a general tendency to a higher sickness rate with increasing age. Both classes of workers show a lower rate for the ages over 60, but this is probably due to special influences.

The two following tables show by age groups the per cent of workers in mines and in quarries receiving each classified daily rate

of wages at the beginning of the year 1906. The tables are based on data for 53,795 employees in mines and 11,646 employees in quarries.

PER CENT OF MINE EMPLOYEES RECEIVING EACH CLASSIFIED DAILY RATE OF WAGES AT BEGINNING OF 1906, BY AGE GROUPS.

Daily wage rate.	Per cent of employees in each wage class—							All ages.
	15 years of age or under.	16 to 21 years of age.	22 to 30 years of age.	31 to 40 years of age.	41 to 50 years of age.	51 to 60 years of age.	Over 60 years of age.	
0.50 lira (\$0.097) or under.....	0.8	0.1	0.1	.....	.....	.....	0.2	0.1
0.51 lira (\$0.098) to 0.75 lira (\$0.145) ..	8.4	2.2	.3	0.1	0.1	0.1	.2	1.1
0.76 lira (\$0.147) to 1.00 lira (\$0.193) ..	28.1	7.3	1.0	1.0	.9	1.2	2.7	4.1
1.01 lira (\$0.195) to 1.25 lira (\$0.241) ..	27.1	13.0	1.9	1.0	.9	1.5	2.3	5.6
1.26 lira (\$0.243) to 1.50 lira (\$0.290) ..	27.2	28.3	6.2	3.7	3.5	3.6	5.0	11.2
1.51 lira (\$0.291) to 1.75 lira (\$0.338) ..	4.2	16.1	11.8	7.2	6.8	7.4	9.3	10.1
1.76 lira (\$0.340) to 2.00 lira (\$0.386) ..	2.4	13.5	19.1	15.9	15.7	17.1	17.8	18.4
2.01 lira (\$0.388) to 2.25 lira (\$0.434) ..	.6	5.7	13.7	12.6	10.6	10.7	9.0	10.1
2.26 lira (\$0.436) to 2.50 lira (\$0.483) ..	.4	6.1	17.1	19.9	18.7	18.1	15.8	14.6
2.51 lira (\$0.484) to 3.00 lira (\$0.579) ..	.5	5.1	17.0	21.1	22.3	20.9	21.4	15.4
3.01 lira (\$0.581) to 4.00 lira (\$0.772) ..	.3	1.7	7.6	11.8	13.0	11.2	10.7	7.9
4.01 lira (\$0.774) to 5.50 lira (\$1.062) ..	.....	.6	2.9	4.1	5.4	5.7	4.2	3.1
5.51 lira (\$1.063) to 7.00 lira (\$1.351) ..	.....	.2	.8	1.1	1.3	1.1	.9	.8
7.01 lira (\$1.353) or over.....	.....	.1	.5	.7	.8	.4	.5	.5
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

PER CENT OF EMPLOYEES IN QUARRIES RECEIVING EACH CLASSIFIED DAILY RATE OF WAGES AT BEGINNING OF 1906, BY AGE GROUPS.

Daily wage rate.	Per cent of employees in each wage class—							All ages.
	15 years of age or under.	16 to 21 years of age.	22 to 30 years of age.	31 to 40 years of age.	41 to 50 years of age.	51 to 60 years of age.	Over 60 years of age.	
0.50 lira (\$0.097) or under.....	11.3	0.6	0.1	.....	.....	0.1	0.2	0.7
0.51 lira (\$0.098) to 0.75 lira (\$0.145) ..	12.5	2.6	.3	0.2	.....	.3	.8	1.2
0.76 lira (\$0.147) to 1.00 lira (\$0.193) ..	31.7	7.1	2.6	1.9	2.0	2.3	5.4	4.6
1.01 lira (\$0.195) to 1.25 lira (\$0.241) ..	13.0	5.8	1.3	.9	1.2	1.0	3.7	2.6
1.26 lira (\$0.243) to 1.50 lira (\$0.290) ..	12.9	11.5	3.4	3.1	3.2	3.9	7.5	5.5
1.51 lira (\$0.291) to 1.75 lira (\$0.338) ..	5.9	6.9	4.0	2.4	4.4	5.7	4.2	4.5
1.76 lira (\$0.340) to 2.00 lira (\$0.386) ..	4.6	16.2	7.0	7.3	7.1	7.8	12.4	9.0
2.01 lira (\$0.388) to 2.25 lira (\$0.434) ..	1.5	8.1	5.8	6.1	5.4	7.5	8.3	6.3
2.26 lira (\$0.436) to 2.50 lira (\$0.483) ..	2.5	13.3	12.5	12.1	12.0	12.8	14.5	12.2
2.51 lira (\$0.484) to 3.00 lira (\$0.579) ..	2.7	15.7	25.9	21.4	22.0	23.9	21.9	20.9
3.01 lira (\$0.581) to 4.00 lira (\$0.772) ..	.8	11.6	32.6	35.1	32.3	27.6	18.2	26.6
4.01 lira (\$0.774) to 5.50 lira (\$1.062) ..	.6	.4	3.5	7.2	8.8	5.8	2.5	4.7
5.51 lira (\$1.063) to 7.00 lira (\$1.351) ..	.....	.1	.7	1.8	1.1	1.0	.4	.9
7.01 lira (\$1.353) or over.....	.....	.1	.3	.5	.5	.3	.....	.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The table for mine workers shows that the most frequent rates for persons 15 years of age or under are from 0.76 to 1.50 lire (14.7 to 29.0 cents) per day; for persons 16 to 21 years of age the most frequent rates are from 1.01 to 2.00 lire (19.5 to 38.6 cents) per day; for persons 22 to 30 years of age the most frequent rates are from 1.51 to 3.00 lire (29.1 to 57.9 cents) per day; for persons 31 to 40 years of age the most frequent rates are from 1.76 to 4.00 lire (34.0 to 77.2 cents) per day, and the same rates occur most frequently for persons over 40 years of age, though there is a tendency to a decrease in the

ages over 60. For all mine workers the most frequent rates are from 1.26 to 3.00 lire (24.3 to 57.9 cents) per day.

The table for quarry workers shows that the higher wage rates occur more frequently than in the case of the mine workers. For persons 15 years of age or under the rates from 0.50 lira (9.7 cents) or under to 1.50 lire (29.0 cents) occur for over 80 per cent of the workers; for persons 16 years to 21 years of age the most frequent rates are from 1.26 to 4.00 lire (24.3 to 77.2 cents) per day; for persons 22 years to 60 years or over there is a tendency for uniformity in rates, 2.26 to 4.00 lire (43.6 to 77.2 cents) per day being the predominating rates. The same rates also predominate for all the quarry workers.

The following table shows the distribution of the mine workers among the various occupations, as well as the number of days worked and the average wages.

NUMBER OF PERSONS EMPLOYED IN MINING IN EACH OCCUPATION, AVERAGE DAYS WORKED, AND AVERAGE DAILY WAGES RECEIVED IN EACH OCCUPATION, 1905.

Occupation.	Average number of persons employed.					Average number of days worked.	Average daily wages.	
	Males.		Females.		Total.			
	Under 15 years of age.	15 years of age or over.	Under 15 years of age.	15 years of age or over.				
Workers below ground:								
Overseers, foremen, etc.		862			862	313	\$0.66	
Pump men		462			462	306	.33	
Engineers, firemen, etc.		95			95	323	.55	
Timbermen, etc.		628			628	297	.62	
Masons and helpers.	37	1,527			1,564	814	.67	
Miners, maintenance men, etc.		1,410			1,410	229	.43	
Miners, pick men, drill men		15,885			15,885	266	.52	
Laborers, carrying boys, trammers	2,776	10,607		8	13,391	253	.32	
Engine tenders, brakemen, etc.		1,494			1,494	266	.48	
Sifters		25			25	250	.37	
Miscellaneous	43	684			727	281	.42	
Total		2,856	33,709		8	36,573	266	.44
Workers above ground:								
Overseers, foremen, watchmen, etc.	2	671		9	682	342	54	
Engineers, firemen, pump men	8	652			660	296	62	
Machinists, lathe men, etc.		94			94	283	60	
Blacksmiths, fitters, apprentices	56	651			707	285	49	
Masons and helpers.	28	381			409	277	48	
Carpenters and apprentices	3	289			292	284	55	
Road men, etc.		26			26	287	39	
Pick men, drill men	19	1,710			1,729	302	71	
Laborers, carrier boys, trammers, furnace men	740	5,473	13	133	6,356	261	36	
Engine tenders, brakemen, etc.		888			888	260	43	
Sifters	267	843	146	890	2,146	280	24	
Screeners	6	102		39	147	304	33	
Washery workers	3	202	1	89	295	278	34	
Kiln men, etc.	1	1,075			1,076	278	43	
Weigh men.		31			31	327	52	
Miscellaneous	104	1,769		48	1,921	283	43	
Total		1,237	14,857	160	1,208	17,462	277	.43
Workers below ground and workers above ground		4,093	48,566	160	1,216	64,085	266	.43

The largest number of workers was employed as miners, pick men, etc., and as laborers. The average number of days worked by both

below ground and above ground workers was 269, with a slightly higher number for the above ground workers.

The same data are given in the following table for the quarry workers:

NUMBER OF PERSONS EMPLOYED IN QUARRIES IN EACH OCCUPATION, AVERAGE DAYS WORKED, AND AVERAGE DAILY WAGES RECEIVED IN EACH OCCUPATION, 1905.

Occupation.	Average number of persons employed.					Average number of days worked.	Average daily wages.
	Males.		Females.		Total.		
	Under 15 years of age.	15 years of age or over.	Under 15 years of age.	15 years of age or over.			
Superintendents, contractors.....		659			659	249	\$0.81
Foremen, bosses, etc.....		37			37	266	.58
Carpenters.....		21			21	275	.56
Masons.....		28			28	244	.52
Machinists.....		64			64	258	.62
Blacksmiths, etc.....	7	117			124	246	.58
Firemen.....		33			33	263	.44
Miners.....		1,341			1,341	243	.55
Quarrymen.....	26	4,169			4,195	233	.56
Laborers.....	99	2,483	4	11	2,597	242	.44
Apprentices.....	208	287			495	243	.25
Clearers, diggers, etc.....		58			58	266	.47
Chiselers, squarers.....	23	1,878			1,901	239	.61
Carters, loaders, etc.....	6	466		15	487	243	.40
Stone breakers, etc.....	4	58			62	240	.53
Kiln men.....		40			40	245	.36
Miscellaneous.....	71	650	16	26	763	209	.49
Total.....	444	12,389	20	52	12,905	238	.53

The occupations in which the largest number of workers was engaged were miners, quarrymen, laborers and chiselers, etc. The average number of days worked was 238.

Salari ed Orari nei Lavori Edilizi, Stradali, Idraulici e di Bonifica, 1906. Ufficio del Lavoro, Ministero di Agricoltura, Industria e Commercio. 1907. 111 pp.

Since October, 1905, the bureau of labor of the Italian department of agriculture, industry, and commerce has conducted monthly inquiries into the amount, character, and conditions of labor performed upon the various kinds of construction and repair work carried on by or on behalf of the State. This information is collected through the offices of the government engineers charged with the direction of the work.

The present report shows the wages and hours of labor of the different classes of employees for the year 1906. The volume comprises three chapters of descriptive matter, followed by a detailed tabular presentation of the data gathered, the latter being arranged by occupations and localities. The first chapter contains a general account of the plan and scope of the inquiry and of the method employed in the collection of the information. The second chapter relates to wages and hours of labor in general and contains a table

showing, by months and by localities, the usual length of the workday in a number of specified occupations. The third chapter is devoted to a consideration of the wages paid and working time most generally observed upon public works in each of the 16 principal subdivisions of the Kingdom.

An appendix shows, for the same territorial groups, the aggregate days of work during each month of the year 1906, classified by character of the enterprise and occupation of the persons employed.

RUSSIA.

Chislennost i Sostav rabochikh v Rossii na osnovanii dannykh pervoi vseobshchei perepisi naselenia Rossiiskoi Imperii 1897 goda (Number and distribution of wage-workers in Russia, based upon the data of the first general census of population of the Russian Empire in 1897). Prepared according to the requests of the Ministries of Finance and of Commerce and Industry, and published by the Ministry of Interior. 2 vols., xx, 300; 600 pp. St. Petersburg, 1906.

This report includes a detailed analysis of the data relating to wage-workers employed in Russian industry and commerce, according to the first Russian census of 1897, and in less detail to the wage-workers employed in agriculture and other branches of rural industry, in personal and domestic service, and to unskilled (common) laborers. It represents the results of an effort to study the wage-earning class as distinguished from salaried employees in Russia, and is of the utmost importance in any study of labor conditions in that country.

The reports of the first Russian census of 1897, published in 1905, contain tables showing the distribution of the population by occupation and also analyzing these data by nationality, religion, age, educational standard, etc. In addition the original schedule also contained the question as to the economic status of the individual, i. e., whether the person was an independent producer, employer, salaried employee, or wage-worker. It may be added that in view of the low level of wages the distinction between a salaried employee and a wage-worker is much more definite in Russia than it is in the United States. The elaboration of the data showing the distribution of the population according to economic status was not undertaken, however, because of the expense. After the publication of the general census reports, the ministry of finance, in view of the growing importance of the labor problem, suggested the desirability of a report on the wage-earners in manufacturing, mining, transportation, construction, and commerce. The report was prepared through the cooperation of the ministry of interior, of which the central statistical commission (intrusted with the entire work of the first

census) is a part, the ministry of finance, and the ministry of commerce and industry, the latter having been organized in 1905. To this very exhaustive statistical report briefer data were added concerning the agricultural wage-workers, common laborers, and employees in domestic service, thus furnishing material for the study of the entire wage-earning class.

This report consists mainly of three general tables relating to the wage-workers of the first group (manufactures, mining, transportation, commerce, etc.). Table I shows the total number of wage-workers and of children under 15 years, by sex, for each industry and by the larger geographical divisions and separate provinces (93 pages). Table II shows the distribution of the wage-workers, by sex, conjugal condition, and size of family for each of 28 industrial groups and each geographical division and province (144 pages), Table III is the most elaborate, occupying 50 pages in the first volume and the entire 600 pages of the second volume. It shows the wage-workers by sex and age groups, and under age and sex groups, the number of literates for each industry (classified by 28 principal industries and by 149 branches of those industries) and for each province. The data for the other wage-earning groups are stated briefly in 12 pages, giving total number and distribution by age, sex, and large geographical division, and using a very simple classification of 10 groups.

The following table shows the number of wage-earners in Russia by sex, main industry groups, and geographical divisions:

NUMBER OF WAGE-EARNERS BY SEX, MAIN INDUSTRY GROUPS, AND GEOGRAPHICAL DIVISIONS, 1897.

Industry and sex.	Wage-earners in each group in—					Total wage-earners.
	European Russia.	Poland.	Caucasus.	Siberia.	Middle Asia.	
Mining, manufacturing, transportation, and commerce:						
Male.....	2,254,099	259,871	118,390	106,659	37,484	2,776,503
Female.....	384,079	51,179	4,540	4,328	936	445,062
Total.....	2,638,178	311,050	122,930	110,987	38,420	3,221,565
Agricultural pursuits:						
Male.....	1,281,626	297,711	159,620	124,134	106,362	1,969,453
Female.....	554,376	142,890	21,413	29,911	4,580	753,170
Total.....	1,836,002	440,601	181,033	154,045	110,942	2,722,623
Common laborers:						
Male.....	479,307	103,415	90,491	55,442	80,771	809,426
Female.....	206,558	50,477	12,253	12,415	3,719	285,422
Total.....	685,865	153,892	102,744	67,857	84,490	1,094,848
Servants:						
Male.....	563,434	95,553	45,631	25,419	16,564	776,601
Female.....	1,054,304	177,931	45,549	44,611	13,639	1,336,034
Total.....	1,647,738	273,484	91,180	70,030	30,203	2,112,635
All occupations:						
Male.....	4,608,466	756,550	414,132	311,654	241,181	6,331,983
Female.....	2,199,317	422,477	83,755	91,265	22,874	2,819,688
Total.....	6,807,783	1,179,027	497,887	402,919	264,055	9,151,671

The total number of wage-earners, as determined by this investigation, was 9,151,671, of whom 69.2 per cent were male and 30.8 per cent female. In the table is shown the distribution of these wage-earners by sex, main industry groups, and geographical divisions. The wage-earners engaged in mining, manufacture, transportation, and commerce constituted 85.2 per cent, the agricultural laborers 29.7 per cent, the common or unskilled laborers 12.0 per cent, and the servants 23.1 per cent. The greatest proportion of wage-earners were in European Russia, with 74.4 per cent, and Poland, with 12.9 per cent, leaving only 12.7 per cent for the entire expanse of Asiatic Russia and the Caucasus. If the industrial wage-earners alone (those employed in mining, manufacturing, transportation, and commerce) are taken into consideration, a still smaller portion was found in Asiatic Russia and Caucasus, as European Russia had 81.9 per cent, Poland 9.7 per cent, Caucasus 3.8 per cent, Siberia 3.4 per cent, and Middle Asia 1.2 per cent.

Women constituted a very important element in the wage-earning population of Russia, namely, over 30 per cent. Naturally the greatest number of women wage-earners belonged to the servant group, of which they constituted 63.3 per cent, while of the agricultural laborers 27.7 per cent were women, of the unskilled laborers 26.1 per cent, and in industrial pursuits 15.8 per cent.

The degree of participation of women in separate industries is shown in greater detail in the following table, from which the nature of the wage-work of women can be better studied:

NUMBER AND PER CENT OF WAGE-EARNERS OF EACH SEX, BY INDUSTRIES, 1897.

Industry.	Total wage-earners.	Males.		Females.	
		Number.	Per cent.	Number.	Per cent.
Mining:					
Miners	163,738	155,020	94.7	8,718	5.3
Smelters	42,638	40,940	96.0	1,698	4.0
Total	206,376	195,960	95.0	10,416	5.0
Manufacturing:					
Textiles	530,138	310,435	58.6	219,699	41.4
Animal products	74,270	71,246	95.9	3,024	4.1
Wood working	173,043	166,285	96.1	6,748	3.9
Metal working	370,933	364,720	98.3	6,213	1.7
Minerals	83,138	74,468	89.6	8,669	10.4
Chemical products	61,094	45,247	74.1	15,847	25.9
Beverages—					
Alcoholic liquors	38,723	36,918	95.3	1,805	4.7
Other	4,220	4,035	95.6	185	4.4
Food products	194,703	183,941	94.5	10,762	5.5
Tobacco	27,994	10,620	37.9	17,374	62.1
Paper and printing	52,175	46,550	89.2	5,625	10.8
Instruments	8,030	7,722	96.2	308	3.8
Jewelry, etc.	25,767	25,213	97.8	554	2.2
Clothing	326,470	256,889	78.7	69,581	21.3
Building	245,724	345,724	100.0		
Carriages and wooden boats	8,793	8,768	99.7	25	.3
Other	65,357	64,029	82.7	11,328	17.3
Total	2,360,572	2,012,825	84.2	377,747	15.8

NUMBER AND PER CENT OF WAGE-EARNERS OF EACH SEX, BY INDUSTRIES,
1897—Concluded.

Industry.	Total wage-earners.	Males.		Females.	
		Number.	Per cent.	Number.	Per cent.
Transportation:					
Post, telegraph, and telephone.....	5,463	5,439	99.6	24	.4
Water transportation.....	44,141	43,885	99.4	256	.6
Railroads.....	175,246	162,784	92.9	12,462	7.1
Carting.....	116,423	117,761	99.4	662	.6
Other.....	25,756	25,391	98.6	365	1.4
Total.....	369,029	355,260	96.3	13,769	3.7
Commercial pursuits:					
Commerce.....	118,787	113,171	95.3	5,616	4.7
Hotels, restaurants, etc.....	76,970	72,266	93.9	4,704	6.1
Liquor trade.....	17,336	15,270	88.1	2,066	11.9
Cleaning, laundry work, etc.....	42,496	11,751	27.7	30,744	72.3
Total.....	255,589	212,458	83.1	43,130	16.9
Agricultural pursuits, etc.:					
Agriculture.....	2,132,699	1,467,862	68.8	665,597	31.2
Cattle raising.....	411,617	241,596	58.9	170,221	41.1
Forestry.....	84,714	83,404	98.5	1,310	1.5
Other rural industries.....	57,990	44,839	77.3	13,170	22.7
Fishing and hunting.....	35,208	32,331	91.8	2,872	8.2
Total.....	2,722,623	1,969,453	72.3	753,170	27.7
Common (unskilled) laborers.....	1,094,846	899,426	73.9	285,422	26.1
Servants:					
In institutions.....	167,240	142,786	85.3	24,534	14.7
In factories, etc.....	226,743	206,729	90.7	21,023	9.3
House servants (janitors, etc.).....	162,053	169,989	98.8	1,964	1.2
Domestic servants.....	1,556,699	268,966	17.2	1,288,513	82.8
Total.....	2,112,686	776,601	36.7	1,336,084	63.3
Grand total.....	9,151,671	6,330,983	69.2	2,819,688	30.8

Of all the wage-earning women, domestic servants constituted 45.7 per cent, agricultural laborers 23.6 per cent, common laborers 10.1 per cent, textile workers 7.8 per cent, those employed in cattle raising 2.5 per cent, in manufacture of clothing 2.5 per cent, and in all other industries 7.8 per cent, so that in 6 industries were over 90 per cent of the female wage-earners. Looking at the same facts from the point of view of the proportion between male and female workers, women were found to predominate in domestic service, comprising 82.8 per cent of all persons employed in this occupation, while other classes of servants showed a very small proportion of women. In cleaning, laundry work, etc., the proportion of women, 72.3 per cent, was almost as great; but somewhat surprising was the very high per cent of women, 62.1 per cent, in the tobacco industry and 41.4 per cent in the textile industry, while in agricultural and other unskilled labor the proportions were lower, being 31.2 per cent and 26.1 per cent, respectively. Female labor was also important in the manufacture of chemical products (soap, candles, matches) and in the clothing industry. It was very limited in mining, in transportation, and in commerce.

The number of children employed under 15 years of age of each sex, and the proportion to the total number of persons employed, are given in the next table:

NUMBER OF WAGE-EARNERS UNDER 15 YEARS OF AGE AND PER CENT OF TOTAL WAGE-EARNERS, BY SEX AND INDUSTRIES, 1897.

Industry.	Total wage-earners.	Children under 15 years of age.			
		Males.	Females.	Total.	Per cent of total wage-earners.
Mining:					
Miners.....	163,738	1,522	238	1,760	1.1
Smelters.....	42,638	521	46	567	1.3
Total.....	206,376	2,043	284	2,327	1.1
Manufacturing:					
Textiles.....	530,138	9,152	7,835	16,987	3.2
Animal products.....	74,270	3,444	236	3,680	4.1
Wood working.....	173,043	9,758	501	10,259	5.9
Metal working.....	370,933	14,475	327	14,802	4.0
Minerals.....	83,138	3,435	792	4,227	5.0
Chemical products.....	61,094	920	658	1,578	2.6
Beverages—					
Alcoholic liquors.....	38,723	268	41	309	.8
Other.....	4,220	80	4	84	2.0
Food products.....	194,703	6,453	520	6,973	3.6
Tobacco.....	27,994	625	1,170	1,795	6.4
Paper and printing.....	52,175	4,660	890	5,530	10.6
Instruments.....	8,030	1,125	31	1,156	14.4
Jewelry, etc.....	25,767	3,977	74	4,051	15.7
Clothing.....	326,470	40,535	17,606	58,141	17.8
Building.....	345,724	5,197	.....	5,197	1.5
Carriages and wooden boats.....	8,793	592	1	593	6.7
Other.....	65,357	684	309	993	1.5
Total.....	2,390,572	105,370	30,985	136,355	5.7
Transportation:					
Post, telegraph, and telephone.....	5,463	42	.....	42	.7
Water transportation.....	44,141	160	3	163	.3
Railroads.....	175,246	273	55	328	.2
Carting.....	118,423	858	15	873	.7
Other.....	25,756	70	2	72	.3
Total.....	369,029	1,403	75	1,478	.4
Commercial pursuits:					
Commerce.....	118,787	18,176	520	18,696	15.7
Hotels, restaurants, etc.....	76,970	5,362	107	5,469	7.1
Liquor trade.....	17,336	1,533	77	1,610	9.3
Cleaning, laundry work, etc.....	42,495	1,062	620	1,682	4.0
Total.....	255,588	26,133	1,324	27,457	10.7
Agricultural pursuits, etc.:					
Agriculture.....	2,132,899	71,218	36,705	107,923	5.1
Cattle raising.....	411,817	92,515	30,756	123,271	29.9
Forestry.....	84,714	907	44	951	1.1
Other rural industries.....	57,960	1,203	1,225	2,428	4.2
Fishing and hunting.....	25,203	612	96	708	2.8
Total.....	2,712,623	166,455	68,826	235,281	8.7
Common (unskilled) laborers.....	1,004,848	15,661	8,011	23,672	2.3
Servants:					
In institutions.....	167,240	1,111	178	1,289	.8
In factories, etc.....	226,743	2,363	916	3,279	1.4
House servants (janitors, etc.).....	162,053	1,287	98	1,385	.9
Domestic servants.....	1,556,599	14,182	154,615	168,797	10.8
Total.....	2,112,635	18,943	155,807	174,750	8.3
Grand total.....	9,151,671	336,008	265,312	601,320	6.6

The total number of wage-earning children under 15 years of age was 601,320, or 6.6 per cent of the total wage-earners. Of this number 336,008, or 56 per cent, were boys. The classes of domestic service, agricultural labor, and cattle raising numbered 399,991, or 66.5 per cent of all the children. Domestic service was the main occupation of the girls, employing 58.3 per cent, and agriculture and cattle raising the main occupation of the boys, employing 48.7 per cent. In manufactures children constituted 5.7 per cent of the total number of wage-earners. The principal manufacturing industries employing child labor were clothing, textiles, metal working, wood working, food products, and paper and printing, named in the order of their importance as to the numbers employed.

The age distribution of the industrial workers is shown by sex, conjugal condition, and the educational standard in the following table:

NUMBER OF MALE AND FEMALE WAGE-EARNERS AND PER CENT MARRIED AND LITERATE, BY INDUSTRY AND AGE GROUPS, 1897.

Industry and age.	Males.			Females.		
	Total.	Per cent married.	Per cent literate.	Total.	Per cent married.	Per cent literate.
Mining, manufacturing, transportation, and commerce:						
12 years or under	33,240		54.5	9,917		40.6
13 to 14 years	101,709		69.5	22,761		56.2
15 to 16 years	195,077	0.1	69.6	47,335	0.9	47.5
17 to 19 years	361,747	4.5	65.6	81,369	8.7	39.8
20 to 39 years	1,519,096	63.6	55.4	215,685	54.0	25.4
40 to 59 years	494,506	83.2	42.1	59,584	45.8	13.3
60 years or over	69,733	68.7	33.7	8,226	17.4	15.3
Age unknown	1,395	41.4	37.9	185	41.6	23.8
Total	2,776,503	51.9	55.4	445,062	34.3	30.5
Agricultural pursuits:						
12 years or under	77,400		21.3	31,875		22.7
13 to 14 years	69,055		28.4	36,961		28.1
15 to 16 years	141,569		28.6	67,394	5	27.8
17 to 19 years	257,962	2.8	31.5	124,887	5.3	31.7
20 to 39 years	897,103	54.1	25.9	309,084	40.6	33.2
40 to 59 years	389,495	77.1	24.5	145,306	38.0	24.1
60 years or over	115,316	65.6	22.5	37,184	18.6	23.6
Age unknown	1,713	30.9	18.1	489	18.0	17.4
Total	1,969,453	44.1	26.3	753,170	25.9	29.5
Common laborers:						
12 years or under	6,077		13.0	2,976		9.6
13 to 14 years	9,584		26.1	5,035		15.1
15 to 16 years	24,523	5	29.5	13,344	1.0	16.4
17 to 19 years	50,611	3.8	34.8	26,346	7.7	17.5
20 to 39 years	412,992	59.8	30.8	113,155	43.6	15.9
40 to 59 years	227,185	77.6	24.4	96,184	29.2	11.2
60 years or over	68,344	69.6	17.9	28,150	13.5	10.3
Age unknown	1,110	18.6	12.9	232	22.0	12.9
Total	809,426	58.5	27.9	285,422	29.3	13.9
Servants:						
12 years or under	7,606		27.5	68,840		13.8
13 to 14 years	11,337		47.4	86,967		21.4
15 to 16 years	22,500	6	49.6	131,950	3	24.1
17 to 19 years	55,692	4.8	50.0	213,943	3.5	27.7
20 to 39 years	384,763	64.9	51.0	540,111	30.3	27.8
40 to 59 years	206,452	82.5	40.9	218,643	25.9	15.4
60 years or over	87,289	66.1	29.7	74,096	10.4	11.9
Age unknown	962	46.6	40.2	1,484	16.6	17.7
Total	776,601	61.9	45.5	1,336,034	17.7	23.3

There is a considerable difference in the age distribution of the two sexes for employees engaged in industrial pursuits (mining, manufacturing, transportation, and commerce). Of the male employees of known ages 24.9 per cent were under 20 years of age, and of the females 36.3 per cent; 54.8 per cent of the males, and 48.5 per cent of the females were from 20 to 39 years old; 20.3 per cent of the males, and 15.2 per cent of the females were 40 years old or over. Hired labor of aged women is not therefore an unusual occurrence. A comparison of the number of married of each sex shows a large proportion of married women as wage-workers; of all female employees 34.3 per cent were married, and of those 15 years of age or over, 37.0 per cent. Of the female employees 20 to 39 years old, 54.0 per cent were married. This is partly explained by the frequency of husband and wife being employed in the same factories, which furnish lodgings to their married employees.

The male employees have a higher educational standard than the female employees, as 55.4 per cent of all male employees and only 30.5 per cent of the female employees could read and write. The younger employees show a much higher percentage of literacy than the older generation, which indicates a marked improvement of educational facilities.

Among the male employees of known ages in agriculture and rural industries 28.8 per cent were under 20 years of age, as against 24.9 per cent in industrial pursuits; the unskilled labor group had 12.3 per cent under 20 years of age; among the male servants the proportion was 12.5 per cent. It is characteristic that the highest percentage of literacy is not shown by the youngest age groups, but by the group 17 to 19 years; many of the agricultural or unskilled laborers evidently acquired the ability to read and write at a more advanced age than the industrial workers who live in the cities.

The following table shows the household relations for the four large groups of wage-earners:

NUMBER AND PER CENT OF WAGE-EARNERS LIVING ALONE, AS MEMBERS OF FAMILIES, AND AS HEADS OF FAMILIES, BY SEX, 1897.

Industry and relation to household.	Males.		Females.		Total.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Mining, manufacturing, transportation, and commerce:						
Living alone.....	1,622,448	58.4	217,488	48.9	1,839,936	57.1
Living as members of a family.....	461,005	16.6	197,837	44.4	658,842	20.5
Head of family.....	683,060	25.0	29,737	6.7	722,787	22.4
Total.....	2,776,503	100.0	445,062	100.0	3,221,565	100.0
Agricultural pursuits:						
Living alone.....	1,175,899	59.7	419,483	55.7	1,595,382	58.6
Living as members of a family.....	275,944	14.0	255,886	34.0	531,837	19.5
Head of family.....	517,610	26.3	77,794	10.3	595,404	21.9
Total.....	1,969,453	100.0	753,170	100.0	2,722,623	100.0
Common laborers:						
Living alone.....	325,622	40.2	113,518	39.8	439,140	40.1
Living as members of a family.....	143,734	17.8	105,510	36.9	249,044	22.8
Head of family.....	340,070	42.0	66,564	23.3	406,634	37.1
Total.....	809,426	100.0	285,422	100.0	1,094,848	100.0
Servants:						
Living alone.....	483,106	62.2	1,247,357	93.4	1,730,463	81.9
Living as members of a family.....	35,139	4.5	72,846	5.4	107,985	5.1
Head of family.....	258,356	33.3	15,831	1.2	274,187	13.0
Total.....	776,601	100.0	1,336,034	100.0	2,112,635	100.0
All classes:						
Living alone.....	3,607,075	57.0	1,997,846	70.9	5,604,921	61.3
Living as members of a family.....	915,822	14.4	631,886	22.4	1,547,708	16.9
Head of family.....	1,809,086	28.6	189,956	6.7	1,999,042	21.8
Total.....	6,331,963	100.0	2,819,688	100.0	9,151,671	100.0

The interesting fact brought out by this table is the very large proportion of wage-earners living alone, namely, 57 per cent of the male workers, and 70.9 per cent of the female workers (the latter figure including all the female servants living in the home of the employer); 14.4 per cent of the male wage-earners and 22.4 per cent of the female wage-earners lived at home as members of the family, the latter figure including the working women living with their husbands. The remaining 28.6 per cent of men and 6.7 per cent of women were living in their own households as heads of families. Thus the number of males living as heads of families, 1,809,086, was much smaller than the number of married men, 3,264,930, indicating a very large number of married men living apart from their families. This condition is partly explained by the fact that many workingmen's wives remain in the agricultural villages while their husbands are employed elsewhere; in many such cases the workingmen have not altogether severed their connection with their families. An examination of similar data for each large group of wage-earners shows this condition to be particularly common among the industrial workers.

OPINIONS OF THE ATTORNEY-GENERAL ON QUESTIONS AFFECTING LABOR.

[It is one of the duties of the Attorney-General of the United States to furnish opinions advising the President and the heads of the executive departments in relation to their official duties when such advice is requested. Opinions on questions affecting labor will be noted from time to time under the above head.]

EIGHT-HOUR LAW—APPLICATION TO LOCK TENDERS, ETC.—*Advance sheets, 26 Op., page 605.*—The Secretary of War addressed an inquiry to the Attorney-General “as to whether certain classes of employees, variously designated as lock masters, lock keepers, lock helpers, lockmen, watchmen, firemen, enginemen, stokers, teamsters, etc.,” are mechanics or laborers within the meaning of the eight-hour law of August 1, 1892. The reply is reproduced practically in full:

It seems from the inclosed memorandum that, at certain locks and dams, persons are employed whose duties are performed at irregular hours and do not require their attention for eight hours in the calendar day. These employees are liable to be called upon at any hour in the day for a service lasting but a few minutes; but, as a fact, the whole sum of the time in which they are engaged is but a fraction of eight hours. The rest of the day is entirely their own. The question is whether the service and employment of such persons, under such circumstances, is legal and proper within the limit and restriction of the statute.

As to laborers employed in a similar manner, I refer you to what was said by my predecessor, Attorney-General Moody (26 Op., 67):

“But I think that the eight-hour day means eight hours of effective labor, and therefore so far as your questions present the case of laborers and mechanics who, from the exigencies of the situation, must wait until after the completion of the regular day to finish their work, I am of the opinion that the blasting, cleaning of trucks, repair of machinery, and all other similar work essential to prompt and continuous service in the regular day may be legally done before and after the regular hours. To be more specific, laborers and mechanics who are called upon to do two hours’ work, for example, before or after the regular day begins or ends have no just cause for complaint that the law is violated if they are only called upon to work six more hours during the regular hours. The law gives no countenance to the conception that the interval between the beginning and end of the regular day is a controlling convention which excludes labor at any other time and entitles workmen to stand around idle if their services can not be fully availed of during that interval. The law limits the working day to eight hours, but it does not prescribe in what hours of the day the work shall be done. Practically, no doubt, there should be a real necessity, as is obviously the case here,

for work during other hours than the regular day; and there should be scrutiny and care lest abuses arise which, however, the right of contract, subject to the law, between laborer and employer ought to prevent."

The cases mentioned in the memorandum of the Judge-Advocate-General come fully within these principles. Under the Cincinnati office are included locks on the Muskingum, Kentucky, and Big Sandy rivers. The employees live at the locks, in Government houses, and none is required to work an aggregate time in excess of eight hours though they are subject to call.

At Milwaukee are included 21 locks at canals of Fox River; the number of lockages averaging less than 2 per day and rarely exceeding 8 for the twenty-four hours.

Other localities at which similar conditions prevail were mentioned, and the opinion continues:

In these cases to require that a sufficient number of men should be employed to prevent any of them from being liable to duty except within a determined and arbitrary period of eight continuous hours would be to put an unreasonable construction upon the statute. It would recognize a favored condition of employment not intended by the law.

A familiar rule is, that where a particular construction of a statute will occasion great inconvenience or produce inequality and injustice, that view is to be avoided, if another and more reasonable interpretation is present in the statute.

Other instances mentioned in the memorandum are upon different footing. At places under the control of the Pittsburg office men are sometimes required to work more than eight hours "when dam is being raised or lowered;" and the service is one "requiring skill and training and could not safely be entrusted to inexperienced men." This does not make a case of extraordinary emergency. The act includes skilled as well as unskilled workmen. The need is for more men; not for the employment during more hours.

At other places, employees are classed as watchmen, dam tenders, custodians, etc. With respect to the legal status of such employees under the eight-hour law, it is impossible to speak with certainty without very full information as to the nature of their employment.

EIGHT-HOUR LAW—APPLICATION TO WATCHMEN, MESSENGERS, ETC.—
Advance sheets, 26 Op., page 623.—The Secretary of War submitted an inquiry as to the application of the eight-hour law to employees stationed at Washington, D. C., and engaged in certain described duties, to which inquiry the Attorney-General replied as follows:

1. I am of opinion that "a watchman, whose duty is to watch the entrance of one of the public buildings occupied by the War Department, executing instructions with regard to admitting persons into the building and permitting public property to be taken out of the building, reporting to his chief any violation of law, disturbance of the peace, etc., that may be brought to his attention, or to guard the

building and property therein during the night," is not either a laborer or mechanic within the meaning of the eight-hour law.

2. I am of opinion that "a laborer, whose duty is to perform manual labor in the removal of furniture and office fixtures, cutting grass, washing floors and windows, and general office cleaning," is not a laborer within the meaning of the eight-hour law. The services required seem to be more those of a domestic servant than those of a laborer in the usual meaning of the term.

3. I am of opinion that a hostler, "whose duty is to feed, drive, and care for horses, and to clean carriages, harness, and stables," is rather a domestic servant than a laborer within the meaning of the eight-hour law, and therefore not subject to the provisions of that law.

4. I am of opinion that a "messenger, whose duty is to sweep floors and do general office cleaning, attend to fires, and carry messages," is not a laborer or mechanic within the meaning of the eight-hour law.

DECISIONS OF COURTS AFFECTING LABOR.

[Except in cases of special interest, the decisions here presented are restricted to those rendered by the Federal courts and the higher courts of the States and Territories. Only material portions of such decisions are reproduced, introductory and explanatory matter being given in the words of the editor. Decisions under statute law are indexed under the proper headings in the cumulative index, page 1005 et seq.]

DECISIONS UNDER STATUTE LAW.

EMPLOYERS' LIABILITY—EMPLOYMENT OF CHILDREN—VIOLATION OF STATUTE—DEFENSES—DISCOVERING AGE—*Syneszewski v. Schmidt et al.*, *Supreme Court of Michigan*, 116 *Northwestern Reporter*, page 1107.—Czeslau Syneszewski, a minor, sued by his next friend to recover damages for injuries received while employed in a tannery in violation of the child labor law of the State. Judgment was in his favor in the circuit court of Wayne County, whereupon the defendants appealed, the appeal resulting in an affirmation of the decision of the court below.

The law in question prohibits the employment of children under 14 years of age in manufacturing establishments, or under 16 years of age in dangerous employments. It also requires an age certificate to be procured for children under 16 years of age. Syneszewski was less than 14 years of age at the time of his injury. He was helping his boss clean a machine, when the latter unexpectedly started it and caught the plaintiff's fingers in some cogs, causing the injury complained of. The contentions on which the appeal was based were that the employers were not liable, the injury having been caused by the act of a fellow-servant of the plaintiff; that the court below had erred in refusing to instruct the jury that if the plaintiff had represented himself, at the time he was hired, as being above 16 years of age, and his employers in good faith believed him to be so, they were not liable; and that in any case, it was not their violation of the statute, but the act of the boss that was the immediate cause of the injury. None of these grounds was allowed by the supreme court,

as appears from the following extracts from its opinion, which was delivered by Judge Ostrander :

It is not open to question (*Sipes v. Michigan Starch Co.*, 137 Mich. 258, 100 N. W. 447; *Sterling v. Union Carbide Co.*, 142 Mich. 284, 105 N. W. 755; *Beghold v. Auto Body Co.*, 149 Mich. 14, 112 N. W. 691) that this statute raises a duty to and for the benefit of persons of the classes liable to be injured by its violation. It is the general rule that a civil action is maintainable where the person complaining is of a class entitled to take advantage of the law, is a sufferer from the disobedience, is not himself a partaker in the wrong of which he complains, or is not otherwise precluded, by the principles of the common law, from his proper standing in court. In giving effect to a portion of the statute we are now considering, this court held that the plaintiff did not assume the risk of violation of the statute duty. (*Sipes v. Michigan Starch Co.*, *supra*.) In *Sterling v. Union Carbide Co.* the plaintiff was injured by machinery while doing the work he was employed to do. It was held that "disregard of the inhibition of this statute, by placing the plaintiff at work at an employment where his life or limb was endangered, constituted the negligence or wrong of which plaintiff has the right to complain, and that the causal connection between that wrong and the injury to plaintiff is clear."

It was said, further, that the question of assumption of risk was settled by the case of *Sipes v. Michigan Starch Co.* Upon this point I am not able to distinguish the case at bar and the *Sterling* case. A distinction sought to be made by counsel rests upon the fact, in the case at bar, that plaintiff was injured by the negligent act of a fellow-servant, that the work he was doing was not in itself dangerous, and that injury would not have resulted but for such negligent act. In the argument counsel fail to give effect to two important facts. In the first place, it was not lawful for defendants to employ plaintiff in their establishment at any work. It is true the trial court did not instruct, and the jury did not proceed, upon this particular inhibition. But the fact is not disputed, and when the law forbids that one shall be employed as a servant, it seems illogical to say that he may be a fellow-servant, or that the employer can be permitted to say that one who, under the terms of positive law, may not be his servant is fellow-servant of his servants. It is only by becoming a servant that the risks of employment, including those arising out of the negligence of fellow-servants, are assumed. In the second place, there was, in this case, what may be termed a "double violation" of the statute. Plaintiff was injured, as was the plaintiff in the *Sterling* case, while engaged in the work he was set to do. It was dangerous work if his "boss," without warning, set the machine in motion. He did set it in motion, and injury resulted. The negligence of the "boss," who was undoubtedly a servant of the employer, was a hazard of the employment which, if assumed by plaintiff, effectually destroys his right to the enforcement of the statute duty. It was not different, so far as assuming risk is concerned, from the hazard arising from unguarded machinery. And any argument based upon the idea that the injury was caused by a fellow-servant implies that the

rule obtaining in cases where injury is caused by an intervening, independent, responsible, human agency has no application. Appellants' first and last contentions are therefore overruled.

Judge Ostrander then reviewed the testimony as to the representations of the age of the boy, and cited the provision of the law which requires a sworn statement of the age, etc., of children under 16 years of age to be secured as a condition to employment, after which he said:

Some effect must be given to this provision. It is unnecessary to determine whether it is mandatory, or whether a false statement made by a parent would prevent a recovery by a child unlawfully employed. It is a precaution which, in furtherance of the legislative purpose, the employer is, in terms, required to observe. It can not be said that its observance would not tend to prevent unlawful employment of children, and therefore prevent violations of the law. It is calculated, not alone to discover the exact age of children under 16, but, also, whether they are over or under that age. Defendants did not observe it. They say it is not required, if the child is more than 16 years old. But plaintiff was not 16 years of age, and was employed by them, in violation of the statute, without any precaution, except to inquire his age and to judge, from his appearance, that he was telling the truth. His age was in question. They regarded the fact as of importance, and they determined, upon the evidence presented, whether his employment would be lawful or unlawful. It has been suggested that the statute should be construed as providing, in effect, for a certificate and permit from the parents or guardians of children—a construction which is aided by the words employed in the 1905 form of the statute—in the absence of which, so far as the age of the child is concerned, employers hire children at their peril. Whatever force there may be to this suggestion, it is sufficient, for the purposes of this case, to say that all that defendants did they would be, in good faith, required to do in any case. But the statute does not accept the mere statement of a child as to his age, and the court can not aid one who did accept it.

EMPLOYERS' LIABILITY—RAILROADS—BRIDGES OVER TRACKS—DANGER SIGNALS—*Chesapeake and Ohio Railway Company v. Rowsey's Administrator, Supreme Court of Appeals of Virginia, 62 South-eastern Reporter, page 363.*—The plaintiff had secured judgment against the company named for the death of G. W. Rowsey, a brakeman in its employ, in the circuit court of Albemarle County, from which judgment the company appealed. Rowsey's death was caused by his striking his head against a low bridge over the tracks of the railroad, and the suit involved the construction of section 1294-d, clause 36, of the Code of 1904. This section requires danger signals to be erected near low bridges, etc., over the tracks and declares that failure to comply with this law shall make the company liable for

injuries resulting from the insufficient height of the bridge. The danger signals were in place in the present case, but the judgment of the court below was affirmed. As to the construction of the section mentioned, the court said:

The section mentioned was not intended to diminish the liability of railroads, but to increase it. If the railroad whose tracks pass under any bridge, tunnel, or structure not sufficiently high to admit of the safe passage of cars upon the tracks with the servants and employees at their posts of duty on said cars fails to maintain at proper distances on each side of said tunnel or structure warning signals of approved design and in general use, those operating such railroads are made liable in damages for the death or injury of any employee or servant resulting from the insufficient height of such bridge, and no contract, expressed or implied, and no plea of, or defense based upon, the contributory negligence of such servant, shall relieve such railroad from liability. Railroads having the structures denounced by this statute who do not erect the danger signals for which it provides are deprived of all defense, and made liable for whatever injury may have resulted from their conduct. But, where the warning signals are placed, we do not understand that the railroad company is thereby made immune from damages resulting from its negligent act in having a bridge or other structure not sufficiently high to admit of the safe passage of its cars with its servants and employees standing at their posts of duty on said cars.

PUBLIC WORK—PROTECTION OF LABORERS AND MATERIAL MEN—
CONTRACTORS' BONDS—ASSIGNMENTS OF CLAIMS—*Title Guaranty & Trust Company v. Puget Sound Engine Works et al., United States Circuit Court of Appeals, Ninth Circuit, 163 Federal Reporter, page 168.*—The trust company named was adjudged liable on a bond to secure the payment of claims for labor and material furnished for the prosecution of public work, in accordance with the act of Congress of August 13, 1894, amended February 24, 1905, 33 Stat. 811. (See Bulletin No. 60, pp. 717, 718.) The work in question was the construction of a steam vessel for the United States. From the judgment of the circuit court the company appealed, raising a number of points, on each of which it was overruled. Only those portions of the opinion which are of interest to labor are reproduced.

Judge Hunt, speaking for the court, said:

The rulings of the court below were, in effect, that, under the terms of the contract entered into, the vessel was a "public work" within the provisions of the statute.

Appellant's counsel earnestly contend that the view of the lower court is erroneous, and argue that the contract of the Puget Sound Engine Works was not for the prosecution or completion of any public work, that title to the vessel did not pass to the government

until completion, delivery, and acceptance, and that the laborers and material men were amply protected by the lien laws of the State of Washington.

The purpose of the original act of 1894 is not altered by the amendment of 1905; nor does the amended act restrict the classes of persons who are entitled to the benefits of the bonds required. As the Supreme Court has said, in comparing the two statutes, the amendment "shows the consistent purpose of Congress to protect those who furnish labor or material in the prosecution of public work." (*Hill v. American Surety Co.*, 200 U. S. 197, 26 Sup. Ct. 168.) Undoubtedly, Congress meant to substitute the obligation of the bond required for such a security as can in most cases be obtained by attaching a lien to the property of an individual. By keeping in mind that the intent of the statute is that material and labor actually contributed to the construction of the work shall be paid for, and thus that the material man and the laborer shall be protected, construction of the statute and bond is quite simple.

The statute extends to construction not only of any public building, but to the prosecution and completion of "any public work," and even goes farther by including "repairs upon any public building or public work." There is no limitation that it shall only apply to public works attached to the soil, and where it is agreed that, as fast as any part of the thing upon which the work is being done is completed and paid for under a percentage plan, such completed part becomes the property of the United States, no lien under a State statute could be enforced, and therefore there is no reason for excluding the construction of a vessel from within the definition of a public work.

It is contended that the United States ought to have been made a party to this suit; but the United States failed to institute any suit and failed to assert any rights by intervention. It does not appear to have had any interest in this action. Under the amended act, the United States has a priority under certain conditions: It may protect such prior right by bringing suit on the bond within six months after the completion and final settlement under the contract; but, if no such suit is brought, then a creditor can sue, and all creditors have a right to intervene within a year. It would seem that the United States, having failed to sue, or to intervene in a suit brought, can not claim against the surety by reason of the execution of the bond.

Objection is made to the claims of the Eyres Transfer Company, Chesley Towboat Company, Allmond Company, and Puget Sound Pattern Works, upon the ground that bills for the labor and materials furnished by these several parties are not within the purview of the bond. The Eyres Transfer Company claimed cartage and freight money paid out. It was not a common carrier, protected by its lien on freight carried, but was a local transfer company engaged in the business of cartage and delivering. We can not approve, though, of the claim of the Eyres Company for freight money advanced to the carriers and added to the cartage bill.

The claim of the Chesley Towboat Company was for wharfage. Such a claim seems to be within the reasonable purview of the statute. (*United States v. Morgan* (C. C.) 111 Fed. 474.)

The claims of the Allmond Company and the Puget Sound Pattern Works were for patterns furnished to the molding department of the Puget Sound Engine Works. The patterns were used for the castings which went into the vessel. Why should not those who furnished the patterns be protected as are those who erect the scaffolding upon which carpenters stand, in doing their work upon the actual construction of a ship? We believe they should be.

The point is made that the claims of laborers and material men are not assignable under the act; but in United States, to the Use of Fidelity National Bank of Spokane, *v. Rundle et al.*, 100 Fed. 400, 40 C. C. A. 450, the right of laborers and material men to enforce the obligation of the sureties on the bond of a contractor for government work, as required by 28 Stat. 278, was held to be assignable.

Error is assigned upon the action of the court in allowing each of the interveners a statutory fee of \$10, taxed as costs. The decision in the case of *The Oregon*, 133 Fed. 609, 68 C. C. A. 603, sustains the action of the lower court.

It is unnecessary to discuss the other points raised by appellant. We have examined them all and find no reason to reverse the decision.

The judgment will be modified by reducing the amount awarded to the Eyres Company by deducting \$55.32, amount of freight money paid. As so modified, the judgment in favor of that particular claimant will be affirmed, and the judgments in favor of all other claimants will be affirmed.

RAILROADS—CONSTRUCTION OF SHELTERS OVER REPAIR TRACKS—CONSTITUTIONALITY AND CONSTRUCTION OF STATUTE—*St. Louis, Iron Mountain and Southern Railway Company v. State*, Supreme Court of Arkansas, 112 Southwestern Reporter, page 150.—The railroad company named was convicted of violating the law, Act No. 233, Acts of 1905, which makes it "unlawful for any railroad company or corporation, or other persons who own, control or operate any lines of railroad in the State of Arkansas, to build, construct or repair railroad equipment, without first erecting and maintaining at every division point a building or shed over the repair tracks, same to be provided with a floor where such construction or repair [work] is permanently done, so as to provide that all men permanently employed in the construction and repair [of] cars, trucks and other railroad equipment, shall be under shelter during snows, sleet, rain and other inclement weather." An appeal was taken, raising questions as to both the constitutionality and the application of the law. Following is a summary of the evidence as set forth by Judge Hill, who announced the opinion of the supreme court:

Van Buren is a division point on the line of the appellant railroad, and it maintained repair tracks there which were built in 1903. The number of men employed in repair work varied, but a force was regularly employed, and was about 15 or 20 at the time the company was charged with the violation of the act, and usually averaged about that many. There was no building or shed over the repair tracks, nor

a floor where the construction or repair work was done. There was no protection from the weather for employees engaged in this repair work. The repairs usually done were substituting new for broken knuckles, putting in draft timbers, bolsters, end sills, and putting roofs on cars and supplying new trucks and wheels for defective or broken ones. Generally speaking, the work done on these repair tracks was that of putting in missing or defective or broken parts on cars which were necessary to enable the car to keep in transit and component parts of the cars were kept in stock for this purpose, and other light repairs that are necessary to conform to the M. C. B. rules and regulations covering interchange of cars. The repairs done at this point were "running repairs." The shops at Baring Cross, near Little Rock, is where the general and permanent repair and construction work of the company is done for the territory in which Van Buren is situated.

The act was upheld, and the judgment of the lower court affirmed, as appears from the quotations from the opinion given herewith:

Two questions are presented on appeal: Does the act apply to the conditions shown to exist at Van Buren? Does the act violate the Constitution of the United States or the constitution of Arkansas?

1. The jury found, and correctly, under the facts, that the work done at Van Buren on the repair tracks was such as was contemplated by the act. The use of the word "permanent" in the act is inapt. The first use of it, "where such work is permanently done," means "constantly"; and "constant" is one of its synonyms. The second use of it, "all men permanently employed" in the repair of cars, is equivalent to "all men regularly employed." Taking the act as a whole, and reading it in connection with its title and the evident purpose thereof, its meaning is reasonably clear. It is the duty of the court to disregard inapt words used, and to enforce it according to its intent gathered from the whole act, and not from any particular word or words therein. Even if the literal use of the word "permanent" is accepted, the work done at Van Buren is within it, for repairs which were made there were usually as permanent as those made elsewhere. For instance, as one of the witnesses illustrated, if a sill was put in, it was as permanent as if done at Baring Cross. But this literal interpretation was not intended by the legislature.

2. Was the act constitutional? The contention of counsel is thus stated: "A brief analysis of the act discloses its fatally arbitrary classification. It applies only to any railroad company or corporation or other persons who own, control, or operate any lines of railroad in the State of Arkansas engaged in the building, construction, or repair of the railroad equipment at every division point. Any other corporation or other person engaged in the building, construction, or repair of railroad equipment within this State may avoid the burden imposed by this act and engage in the building, construction, or repair of railroad equipment without limit and compel those engaged in this work to pursue their labor without shelter during snow, sleet, rain, and other inclement weather." It is not shown here, as it was in *Cotting v. Kansas City Stockyards Co.*, 183 U. S. 79, 22 Sup. Ct. 30, 46 L. Ed. 92, that as a matter of fact the law operated only upon one corporation, although others in like and similar conditions were

not affected by it, owing to a classification based entirely upon volume of business. Nor was shown here, as in *Yick Wo v. Hopkins*, 118 U. S. 356, 6 Sup. Ct. 1064, 30 L. Ed. 220, that, although fair on its face, yet the practical operation of the law made it fall unequally upon persons similarly situated. The contention here is that the act shows upon its face an arbitrary selection of railroad corporations who own, control, and operate lines of railroad in the State engaged in the building, construction, or repair of railroad equipment at division points to bear the burden imposed, and excludes by this selection any other persons or corporations who may be engaged in the construction, building, or repairing of railroad equipment. It is stated at the bar that there are no such corporations or persons engaged in such business in this State, and, so far as the court knows from such sources as it is proper for it to take information, this statement is true.

It is asserted, and probably the court could take cognizance of it as a matter of common knowledge, that there are persons and corporations in other States engaged in the building, construction, and repair of railroad equipment who do not own or operate any lines of railroad. The argument is that under this act it is possible for a commercial corporation or private individual to engage in this business in Arkansas, and, when that happens, which may occur at any time, then the act will fall unequally upon persons similarly situated and engaged in like occupations, and thereby be offensive to the equal protection of the law provision. The court in *Williams v. State*, 108 S. W. 838, said: "The legislature in framing this statute met a condition which existed, and not an imaginary or improbable one." While it is not improbable that some commercial corporation may engage in this business in this State, yet that is an imaginary objection to the operation of the act, and it was "a condition, not a theory," which called forth this legislation. The court is unable to find the classification here made offensive to the equality clause of the Constitution as construed by the Supreme Court of the United States, whose decisions are binding on this subject.

SUITS FOR WAGES—ATTORNEYS' FEES—CONSTITUTIONALITY OF STATUTE—*Chicago, Rock Island and Pacific Railway Company v. Mashore*, Supreme Court of Oklahoma, 96 Pacific Reporter, page 630.—This was an action by W. F. Mashore to recover a sum of money due for labor, and also, under paragraph 6915, Wilson's Revised and Annotated Statutes, to recover an attorney's fee, which that statute allows where there is a successful suit for wages. The case itself is not of interest here, but the provision as to the attorney's fee was called in question and was declared unconstitutional, as appears from the following opinion of the court, which was delivered by Judge Dunn:

The statute providing the assessment of attorney's fees in cases of this character is violative of the fourteenth amendment of the Constitution of the United States, in that it does not give to all parties the same, equal protection of the law. The defendant, being sued for

wages under this statute, is not on an equal footing with the plaintiff. If he makes an unsuccessful defense, he is mulcted in an attorney's fee, to be paid to the plaintiff, while if he is successful, the plaintiff is not required to pay any attorney's fee to him. In other words, justice is not dispensed, with an impartial and equal hand, to these litigants. A court is always loath to hold a statute, the solemn act of the legislature, unconstitutional and void, and never does so, except where its provisions make this duty a plain and imperative one. In the present case we have examined a large number of authorities wherein the constitutionality of such statutes has been raised, and in every one of them the court of last resort has held it unconstitutional.

A number of cases were then cited, after which the court concluded:

From the foregoing authorities it will be seen that our statute providing for recovery, in suits for personal services rendered by a laborer, clerk, servant, nurse, or other person, an attorney's fee not to exceed \$15, to be fixed by the court, is in conflict with the fourteenth amendment to the Constitution of the United States, in that it denies to the defendant the equal protection of the law.

DECISIONS UNDER COMMON LAW.

INJUNCTION—VIOLATION—CONTEMPT—PERSONS NOT PARTIES TO ORIGINAL BILL—NOTICE—NATURE OF PROCEEDINGS—*Garrigan v. United States, United States Circuit Court of Appeals, Seventh Circuit, 163 Federal Reporter, page 16.*—Daniel Garrigan was adjudged guilty of contempt in the United States circuit court for an alleged violation of an injunction issued during the teamsters' strike in Chicago in 1905, and was sentenced to a term of imprisonment. From this judgment Garrigan appealed, and secured a reversal of the judgment of the lower court. The injunction in question had been secured by the Employers' Teaming Company, and was directed against certain organizations and individuals named, and the proceedings in the court below were at the instance of this company.

The evidence on which conviction was obtained, and the principles of law involved showing the grounds of reversal, are set forth in the opinion of the court, which was delivered by Judge Seaman, and which for the most part is reproduced herewith:

The plaintiff in error was not a party to the bill filed by the Employers' Teaming Company for injunctive relief, nor a member of either of the associations named as defendants therein, nor named in the restraining order whereof violation is averred in these contempt proceedings, and neither averment nor proof appears of his relation to or privity with either of the parties enjoined, prior to or apart from the alleged acts in violation and contempt of such order. Thus the proceedings and conviction which are brought for review under this writ of error are distinctly criminal in their nature, and reviewable in conformity with the established doctrine of such procedure. (*Besette v. W. B. Conkey Co.*, 194 U. S. 324, 326, 24 Sup. Ct. 665; *Matter of Christensen Engineering Co.*, 194 U. S. 458, 459,

24 Sup. Ct. 729.) Whatever of confusion appeared in the authorities, prior to the decisions above cited, as to the distinction in contempt proceedings between those of civil and criminal nature—the one remedial for the benefit and enforcement of the rights of parties to a suit, and the other to punish for acts in contempt of the power and dignity of the court—that classification has become the settled rule for testing the nature of the proceeding and reviewable questions.

The proceedings against the plaintiff in error were instituted by a petition filed by the Employers' Teaming Company, as complainant in the above-mentioned bill, averring, in substance, the issuance of the injunctive order referred to, its wide publication in newspapers in Chicago, and posting conspicuously on all the wagons of complainant which were engaged in the operation described, and stating "upon information and belief that each of the persons hereinafter named as respondents to this, its said petition, did at the time of the commission of the acts hereinafter complained of have full knowledge and notice of the issuance of said temporary stay or injunctive order, and knew, or by the exercise of ordinary intelligence might have known, of the issuance of said injunctive order." An answer was filed by the plaintiff in error, under a rule entered and served to show cause why he should not be adjudged guilty of contempt and after raising various objections to the petition and proceeding, which denies under oath commission of the several acts and offenses charged in the petition and affidavits, and denies knowledge or notice of the injunction, or violation thereof "intentionally or otherwise."

The evidence upon which the conviction rests appears in a bill of exceptions, and consists mainly of ex parte affidavits, purporting to be made by witnesses of the occurrences in controversy—with a single witness, one Dimick, produced and testifying in open court—which affidavits were submitted on behalf of the parties respectively. In the opinion filed by the trial court it is aptly remarked that the opposing affidavits, "as is usual in such controversies, were directly contradictory of each other;" and that, in "such irreconcilable conflict of testimony, it is often impossible to get a clue to the truth." While these affidavits concur in proving a case of mob violence during the attempted movement of complainant's teams and wagons through the streets of Chicago, and riotous interference with the persons guarding them, those introduced for the prosecution and defense are "directly contradictory" in all the facts bearing upon the issues involved, both in respect of the conduct of the parties, collectively and individually, engaged in the riot, and of the part and conduct of the plaintiff in error therein. Assuming, without deciding, that it was within the discretion of the trial court to hear the case upon such affidavits, instead of ascertaining the facts from testimony taken in open court, as was the course adopted in the *Savin Case*, 131 U. S. 267, 268, 9 Sup. Ct. 699, and mentioned as of course in *United States v. Shipp*, 203 U. S. 563, 575, 27 Sup. Ct. 165, the facts to authorize conviction must nevertheless be clearly established, and the affidavits introduced here exemplify the infirmity of such ex parte means for the "legal understanding" of facts in controversy intended by the rules of evidence.

In any view of the charges of contempt and evidence so received, it is unquestionable that the only issues of fact were: (a) Whether the accused had knowledge of the injunction; and if such knowledge

appeared, whether he committed acts, either (b) in aid of its violation by the parties enjoined, or (c) in plain defiance of its terms—and thus in contempt of the authority and commands of the court. As it is neither charged nor proven that the plaintiff in error was one of the parties enjoined, he is not chargeable for breach or violation of the injunction, in the well-recognized sense of those terms applicable to parties. He was bound, alike with other members of the public, to observe its restrictions when known, to the extent that he must not aid or abet its violation by others, nor set the known command of the court at defiance, by interference with or obstruction of the administration of justice; and the power of the court to proceed against one so offending and punish for the contemptuous conduct is inherent and indisputable. (*Seaward v. Paterson*, 1 L. R. Ch. Div. (1897) 545, 554, 76 Law Times (N. S.) 215; *In re Reese*, 107 Fed. 942, 47 C. C. A. 87, 90.) We believe the above-mentioned distinction in contempt proceedings, between disobedience of the injunction by parties and privies and the conduct of others in contempt of the authority and commands of the court, to be elementary, and the sufficiency of the evidence in the case at bar to support conviction must be tested thereunder. The question discussed in the briefs, whether the general averment in the petition that the plaintiff in error “violated said injunctive order,” authorized reception of this evidence to establish either class of contempt relied upon for conviction, is not involved in our view of the effect of the affidavits, incorporated in the petition, that they aver such facts and furnish notice for the introduction. The petition is plainly defective, however, in the averments to charge the plaintiff in error with knowledge of the injunction—stating alternatively that he “knew, or by the exercise of ordinary intelligence might have known, of the issuance”—but laying out of view for the present inquiry the objection raised thereupon, we proceed to consideration of the versions of fact on which the finding and conviction are predicated, to ascertain their bearing and sufficiency.

The present proceedings arose out of notorious conditions of mob violence which attended a strike in Chicago, known as the “teamsters’ strike,” in April and May, 1905. While the “contempt proceeding is sui generis,” it is distinctly criminal in its nature (*Bessette v. W. B. Conkey Co.*, *supra*), and the accused is clearly entitled to the benefits of the common-law presumption of innocence, with its strict requirement of proof for conviction, although the pleadings may not be subject to the technical rules of the criminal law.

Taking up the affidavits introduced in support of the charges of contempt, they plainly state a vicious attack upon two teams of the complainant and the persons attending as guards, by a mob and individuals named, for the manifest object of obstructing the teams and injuring the guards. They identify the plaintiff in error as one of the assailants, “in the uniform of a city fireman,” and state: That he was following up the teams and guards, in their passage through the street; that he was observed “throwing stones at the colored men guarding the teams,” was swearing at the guards, “calling vile names,” and cried out to the crowd, to “hang the damned niggers;” and that he ultimately assaulted and struck one of the guards, after such guard was arrested by the city police force, was in their custody and either in a police wagon or “getting into it.” The single witness,

Dimick, called to testify upon the hearing, states only the last-mentioned assault upon the guard so arrested and in custody in the police wagon. These versions of fact, in substance—without a fact stated to connect the mob violence or individual attacks with parties named in the injunction, either as associations or individuals, or with express defiance of such injunction, and with no proof tending to show knowledge of the injunction or intent to defy its commands, aside from the alleged publications of the order in the public press and notices thereof borne upon the wagons thus interfered with—constitute the evidence upon which the plaintiff in error is adjudged guilty of contempt. On the part of the plaintiff in error, his presence when the conflict occurred is admitted, but his testimony is specific in denial of every act of violence or participation above mentioned, and he states, in substance, that his only part in the disturbance was to assist “the police to protect life and property,” and that he did so assist in quelling the riot and arresting rioters, in conformity with his understanding of his duty, as one of the city firemen. This version is supported by several affidavits, by policemen and other witnesses, and subsequent proceedings in the criminal court were introduced by way of corroboration.

The findings by the court stated in the judgment are in general terms, in effect, that plaintiff in error, (a) with full knowledge of the injunction, (b) did willfully and in violation of its terms interfere with, “and aid and abet the defendants, or some of them, to said bill,” in interfering with “the business of said the Employers’ Teaming Company” and its employees and agents engaged therein, and (c) that he “has failed to show cause why he should not be attached and punished as for contempt.”

We are of opinion that each of the findings is unsupported, in any admissible view of the facts so established. The finding that the plaintiff in error had “full knowledge of the injunction”—a fundamental requisite for either charge of contempt—rests alone on the alleged publicity of the issuance, through newspapers and notices thereof which were posted on the wagons intercepted by the mob. No testimony appears of word or action on the part of the plaintiff in error, or in his hearing, in reference to the injunction; nor that his attention was directed to the wagons, their contents, or any notices thereon. He is clearly entitled to the benefit of “the presumption of innocence, as evidence in favor of the accused, introduced by the law in his behalf” (*Coffin v. United States*, 156 U. S. 432, 458, 460, 15 Sup. Ct. 394, reaffirmed in the recent opinion of this court in *Dalton v. United States*, 154 Fed. 461, 83 C. C. A. 317), which arises alike in respect of notice and conduct, as “an instrument of proof created in his favor;” and the mere inference of “full knowledge,” derived solely from the above-mentioned facts, is without force, as we believe, to overcome the express denial of knowledge on the part of the accused, fortified by the presumption thus defined. The finding of such knowledge therefore is unsupported by the needful proof to authorize conviction and can not be upheld under the foregoing view. So the question whether the insufficient averment thereof in the petition constitutes reviewable error does not require solution.

Upon these premises therefore, that knowledge of the injunction is unproven, and that no proof appears that the plaintiff in error was engaged by or with any person or association enjoined in its violation,

we are of opinion that the evidence fails to establish cause for his conviction of contempt of court, within either of the classes found and adjudged against him. The misconduct stated by the witnesses for the prosecution—in assailing and abusing the guards, who were protecting the movement of the teams, and inciting the mob to like interference—however criminal in its nature and disturbing in purpose and effect, thus standing alone, does not constitute contempt within either definition of such offense. Willful defiance and contempt of the authority and order of the court can not be intended or committed without information that such authority has been exercised in the issuance of an injunction protecting the movement and services thus interfered with. Nor is the alleged misconduct brought within the finding of violation of the order, in aiding or abetting “the defendants, or some of them, to said bill of complaint, in committing the acts and grievances complained of,” for the further reason that it does not appear in evidence that any such parties were engaged in the attack, directly or indirectly. In reference to the alleged subsequent assault upon one of the guards, when such guard was under arrest and in the custody of the police authorities, we deem it sufficient to remark that the guard was not then serving as escort, and any offense then committed was against the dignity of the State, and not that of the court issuing the injunction.

For want of evidence that the plaintiff in error was guilty of contempt of court in his alleged misconduct, the judgment of the circuit court is reversed, with direction to discharge the rule against the plaintiff in error.

STRIKES—INJUNCTION—PICKETING—INTERFERENCE WITH EMPLOYMENT—*Jones et al. v. E. Van Winkle Gin & Machine Works, Supreme Court of Georgia, 62 Southeastern Reporter, page 236.*—Certain employees of the company named became dissatisfied and left its employment, whereupon a demand was made by a local lodge of the International Association of Machinists for certain changes in the conduct of the company’s business. This demand was not complied with, whereupon a strike was declared. Picketing and threats followed, and the company secured an injunction from the superior court of Fulton County, from which order an appeal was taken to the supreme court, which affirmed the order with some modifications.

The facts involved and the principles of law applied are set forth in the following extracts from the opinion of the court, which was delivered by Judge Evans:

After hearing evidence, the defendants were “enjoined from placing themselves, their agents or confederates, near the approaches to the petitioner’s premises described in the petition and adjoining thereto to induce persons working for petitioner not to work for it, and persons seeking employment by petitioner not to enter petitioner’s employment, by threats of violence, intimidation, or persuasion, until the further order of the court.” Exception is taken to the judgment in its entirety, and specially to so much thereof as forbids the defendants from placing themselves in or near the premises of the

plaintiff for the purpose of persuading persons not to enter the plaintiff's employment, or to quit the same, so long as the entrances to the plaintiff's premises were not obstructed, and so long as violence, force, and intimidation were not used. The points raised by the demurrer were not argued in the brief, but only the legality of the decree and the sufficiency of the evidence to support it.

The lawfulness or unlawfulness of "picketing" has been the subject-matter of discussion in a large number of cases in this country. In the absence of statutes, courts have drawn from the elemental principles of the common law certain standards by which this modern factor used by labor unions as a means of settling controversies between employer and employees must be regulated. When strikers patrol the streets and approaches of the premises where the strike is in progress, and their number is so great, or their conduct is such, as to intimidate and coerce the employees into quitting their employment, or others from seeking employment, they are guilty of unlawful acts, and will be enjoined from a continuance of them. Sometimes the number of strikers engaged on the patrol may be so great that those intended to be affected by the demonstration will be intimidated by the number of the strikers or their sympathizers without special overt acts. The courts have repeatedly held that the assembling of strikers around the establishment of the employer in such numbers as will serve as a menace to those employed, or the keeping of patrols in front of or about the premises of the employer, accompanied by violence or any manner of coercion to prevent others from entering into or remaining in his service, will be enjoined.

It is a penal offense in this State to attempt by threats, violence, intimidation, or other unlawful means to prevent any person from engaging in any lawful employment, or to hinder, by such means, any person from employing laborers. But a court of equity is not ousted from the exercise of its peculiar functions of preventing irreparable damage merely because, in exercising such functions, it may also prevent the commission of a crime. The court does not interfere to prevent the commission of crime, although that may incidentally result, but it exerts its force to prevent individual property from destruction, and ignores entirely the criminal feature of the act. And Mr. Pomeroy (6 Pom. Eq. Jur. 619) says that "it is everywhere the rule, following the general principle in equity, that where there is ground for equitable interference, as where an irreparable injury is threatened to property, the fact that the act is also a crime is not a reason for refusing an injunction." This principle was recognized and applied by this court in the case of an indictable nuisance. (*Mayor of Columbus v. Jaques*, 30 Ga. 506.) So it is no reply to the invocation of the equitable remedy to prevent irreparable injury to property that the acts which cause the damage may also be indictable.

As already said, members of a labor union, either individually or as an association, have no right by force, menace, or intimidation to prevent others from working upon such terms as they are willing to accept, or to hinder by such means any person from employing laborers. In many cases it may be difficult to draw the line of demarcation between intimidation and inoffensive persuasion. In a New York case (*Rogers v. Evarts* [Sup.] 17 N. Y. Supp. 264) it was

said: "It may be impossible to lay down a general rule as to what surrounding circumstances will characterize persuasion and entreaty as intimidation. Each case must probably depend upon its own surroundings. But, where evidence presents such a case as to convince the court that the employees are being induced to leave the employer by operating upon their fears rather than upon their judgments or their sympathy, the court will be quick to lend its strong arm to his protection. Rights guaranteed by law will be enforced by the court, whether invoked by employer or employee." The very word "picket" is borrowed from the nomenclature of warfare, and is strongly suggestive of a hostile attitude towards the individual or corporation against whom the labor union has a grievance. But the law does not forbid employees who have quit their employer from using legitimate argument to induce others to refrain from taking their places. The current of authority is that a court of equity will not enjoin employees who have quit the service of their employer from attempting to persuade, by proper argument, others from taking their places, so long as they do not resort to intimidation or obstruct the public thoroughfares. [Cases cited.]

The court then reviewed some of the evidence, citing some of the remarks of the pickets, and said:

These and similar threats, and the constant surveillance of the plant by the pickets, caused other departments of the plaintiff's plant to shut down for lack of machinists. At this juncture of affairs the defendants were restrained by a temporary order from interference with the plaintiff's business; and after the grant of the restraining order, according to the testimony of the superintendent, "everything has assumed a different attitude, and a feeling of rest and confidence has taken place which did not exist while the premises were picketed." The quoted remarks of the strikers to the men who were seeking work were more than a peaceable and argumentative presentation of their grievance. The language implied a threat of harm, and the warning to stay out, if unheeded, might be attended with hurtful consequences. The language of these pickets was clearly intimidative, and tended to coerce compliance with their request not to work for the plaintiffs; and there was no error in enjoining such conduct. The form of the injunction is perhaps too broad, in that the strikers are enjoined from using all form of persuasion. As we have pointed out, it was not unlawful for the strikers to use legitimate argument and moral suasion in presenting their case to those who offered to take their places, so long as it is neither coercive and intimidating in character. In affirming the judgment, direction is given to so amend the decree as to make it accord with the opinion of the court in this particular.

LAWS OF VARIOUS STATES RELATING TO LABOR ENACTED SINCE JANUARY 1, 1904.

[The Tenth Special Report of this bureau contains all laws of the various States and Territories and of the United States relating to labor in force January 1, 1904. Later enactments are reproduced in successive issues of the Bulletin, beginning with Bulletin No. 57, the issue of March, 1905. In the cumulative index, page 1006 et seq., are indexed all laws found in the Tenth Special Report, together with those enacted since January 1, 1904, and published in Bulletin Nos. 57 to 79, inclusive.]

TENNESSEE.

ACTS OF 1907.

CHAPTER 256.—*Hiring out children to support parents in idleness.*

[See Bulletin No. 73, p. 799.]

CHAPTER 308.—*Employment of women and children—Hours of labor.*

[See Bulletin No. 73, p. 799.]

CHAPTER 540.—*Mine regulations.*

SECTION 1. Section 1 of * * * [chapter 237, Acts of 1903] is hereby amended so as to add at the end of said section the following: "Immediately after the passage of this act there shall be appointed in the same manner as now provided for the appointment of the present district mine inspectors an additional district mine inspector, who shall hold his office for a period of two years from date of appointment, and thereafter until his successor is elected and qualified. Said additional district mine inspector must have a general knowledge of the conduct of the mining business, and shall, in addition to such qualifications, be thoroughly familiar with the work necessary in the compilation of mining statistics. He shall receive a salary of (\$1,700) seventeen hundred dollars per annum and the same traveling expenses as that allowed other district mine inspectors under section 8 of said act, to be paid in the same manner, and he shall be subject to the same rules and regulations as now provided or may hereafter be provided for other district mine inspectors."

SEC. 2. Section 7 of said act [shall] be amended so as to add at the end of section 7 the following: "In order that such full and complete statistics as, in the opinion of the chief mine inspector, is essential for the promotion of the mineral industry of Tennessee, may be obtained and published in said annual report, each and every person, firm, company, or corporation engaged in the mining, quarrying, or production of coal, cobalt, copper, fluorspar, gold, iron, ores, lead, lime, manganese, mineral waters, natural gas, petroleum, phosphate rock, platinum, sand and gravel, sand, lime, brick, silver (mines report), stone, including limestone, sandstone, and marble, or other stone, zinc, gypsum, ocher, pyrites, salt-clay products, slate, or other minerals, or engaged in the manufacture of coke, brick, coal tar, lime, pig iron, ammonium sulphate, gas coke, Portland and natural cement, grindstone, metallic paint and mortar colors, flint, and all other by-products of any minerals produced in this State, shall, on or before January 15 of each year, make out and send to the chief mine inspector upon blanks, to be by him furnished and sent out for that purpose, detailed annual report, giving such statistics and information concerning the output of said mines or plant, the tonnage, number of employees, and the number of days worked. It is thereby declared a misdemeanor for any person, firm, company, or corporation to fail or refuse to furnish the chief mine inspector any and all information called for for said annual report, as above provided, on or before the fifteenth day of January of each year; and any all parties or agents so failing or refusing to furnish said reports within the time specified shall, upon conviction, be fined one hundred dollars for each day of delay, said fine to go

to the State of Tennessee. And it is hereby made the duty of the chief mine inspector to report said failure to the district attorney-general of the district where the mine, quarry, or other works are situated; and in the event of the failure of any such parties to furnish such information, it shall be the duty of the chief mine inspector to call upon such party and inspect such books and records of said firm or corporation or company as will give him the information above provided for; and such person, firm, or corporation shall be required to permit examination of all necessary books or records as will enable the chief mine inspector to obtain the information above provided for, such inspection to be made at its chief office and at any reasonable time; and their failure to permit such inspection shall be a misdemeanor and finable as above provided."

Sec. 4. Section 14 of said act [shall] be amended so as to read as follows:

Sec. 14. For the purpose of the examination of applicants for certificates of qualification the chief mine inspector and district mine inspectors provided for in this act be, and are hereby, constituted a board of examiners, of which the chief mine inspector shall be the chairman. Said board may hold meetings at such times and places for the examinations of applicants for the position of mine foremen, gas bosses, etc., as in its judgment may be most convenient. Said board shall have power to make such rules and regulations for the conduct of said examinations as in its judgment may seem proper for ascertaining the qualification of the applicants, and shall conduct all examinations in the presence of the majority of its members. Said board shall report its action to the secretary of state, and majority of same shall certify to the qualification of each applicant who satisfactorily passed the examination, and shall serve without compensation. The chief mine inspector is hereby authorized and empowered to revoke and annul the certificate of any foreman or assistant mine foreman or gas boss or other foreman or bosses issued under this act upon satisfactory evidence appearing to him that the holder of said certificate is or has been guilty of negligence in the performance of his duties, immoral conduct, or his wanting in integrity, and upon the revocation of such certificate the chief mine inspector shall make a record of same in his office, and shall immediately certify the same to the secretary of the state, who shall record said revocation upon a book containing copy of certificate issued. The chief mine inspector shall notify the holder of such revoked certificate of said revocation, and the holder of said certificate shall immediately surrender the said revoked certificate to the chief mine inspector, to be by him turned over to the secretary of state for cancellation. Should the holder of said revoked certificate fail or refuse to surrender the same as herein provided, he shall be deemed guilty of a high misdemeanor, and, upon conviction, be fined not less than one hundred dollars (\$100) and be imprisoned not less than three months nor more than eleven months in the county jail or workhouse: *Provided*, Any foreman, assistant mine foreman, gas boss, or other foreman or boss whose certificate has been revoked as herein provided may, within ten days after receipt of the notice of revocation herein provided for, notify the chief mine inspector of his desire to be reinstated and have said order of revocation annulled; and if at the time he shall execute bond, payable to the State of Tennessee, with good and sufficient security, conditioned to pay the costs incident to the proceeding, in the event he is unsuccessful in his efforts to be reinstated and set aside the order of revocation, it shall then be the duty of the chief mine inspector to fix a day, not later than ten days from such written demand, [and a place.] which place shall be within the civil district where the party whose license is revoked lived at the time of the revocation, and at said time and place the chief mine inspector shall appear and hear such legal evidence as may be offered by such aggrieved party, as well as such legal evidence as may be offered in favor of the order of the chief mine inspector revoking his license, which evidence shall be reduced to writing, and upon such evidence said chief mine inspector shall pass judgment, either affirming the order of revocation of the chief mine inspector or reversing the same; and in the event the order of the chief mine inspector is reversed, such party shall be reinstated. The written testimony taken in the case shall be preserved by the chief mine inspector as a part of the records of his office: *Provided*, That either party may take the case from the action of the mine inspector made on said written evidence before the judge of the circuit court of the county where said trial is had by writ of certiorari prosecuted within twenty days from the date of the judgment of said inspector; and in the event of such action, the chief mine inspector shall cause a certified copy of all the evidence, as well as the original order of revocation and his order

thereon, made on said written evidence, certified by him as a true and correct copy of same, to be filed in the office of the clerk of the circuit court where the said petition for certiorari is filed, and the case shall thereupon stand for hearing before the judge of said circuit court upon such certified record at the next term of the court after the filing of same. The writ of the certiorari in such cases may be granted by any judge of the State on proper petition being presented to him therefor, and upon the execution of a bond for the costs of the petition in the event that the same is prosecuted by the party whose license is revoked, the circuit judge shall pronounce judgment on said certified copy, either affirming the action of the mine inspector or revoking and setting aside the same. In all trials of cases of this kind before the circuit court the mine inspector shall be represented by the district attorney-general, and the party whose certificate has been revoked shall be entitled to have counsel to represent him as in other matters of litigation. In the event the party seeking to be reinstated is unsuccessful in his contention, judgment shall be rendered by the chief mine inspector in the first instance against said party and the sureties on the bond filed for that purpose for all costs incident to the proceeding and by the circuit judge for all costs incident to the prosecution of the writ of certiorari. If the action of the chief mine inspector is annulled and set aside, either by the inspector or by the circuit judge, then the costs of the proceeding shall be certified by the clerk and the judge and the attorney-general to the comptroller of the State for payment out of the appropriation for the support of the mining department of the State.

SEC. 5. Section 15 of the said act [shall] be amended so as read as follows:

SEC. 15. Said certificate shall contain the full name, age, and place of birth of the applicant, also the length and nature of his previous experience in and about coal and other mines, and the secretary of state shall, without cost, keep a record in his department of all the certificates issued. Before the issuance of certificates to any applicant the applicant must give satisfactory evidence to the board of examiners of his good conduct, honesty, capability, and sobriety, and shall pay the said board of examiners for the use and benefit of the State the following fees: For conducting the examination (to be paid for when the examination is held), five dollars (\$5); for the issuance and registration of the certificate, five dollars (\$5), to be paid for when issued. All fees collected by virtue of provisions of this section shall be reported and paid into the state treasury at the end of the month during which said collections are made by the board of examiners, to be placed to the credit of the mining department.

SEC. 6. So far as section 35 of said act fixed fees for the inspection of mines it is hereby amended so as to provide for the following schedule of fees for the use of the State: Mines employing an average of 100 inside employees or over, \$35; mines employing an average of 75 to 99 inside employees, \$30; mines employing an average of 50 to 74 inside employees, \$25; mines employing an average of 25 to 49 inside employees, \$20; mines employing an average of 15 to 24 inside employees, \$15; mines employing an average of 10 to 14 inside employees, \$10; mines employing an average of less than 10 inside employees, \$5.

SEC. 7. Section 20 of said act [shall] be amended so as to strike out after the word "expedient," in the latter part of same, the following words: "*Provided, further,* That said mine foreman shall not be subject to the control of the operator or owner in the discharge of the duties required of said mine foreman by this act," and said mine foreman is hereby expressly declared to be the agent or representative of the operator or owner of the mine in the discharge of the duties required of said mine foreman by this act.

SEC. 8. Section 21 of said act [shall] be amended by striking out the following words at the end of said section: "*Provided,* The said gas boss shall not be subject to the control of the owner or operator in the discharge of any of the duties required of said gas boss by this act," and said gas boss is hereby expressly declared to be the agent or representative of the operator or owner of the mine in the discharge of the duties required of said gas boss by this act.

Approved April 15, 1907.

CHAPTER 541.—*Intelligence offices.*

SECTION 4. Each vocation, occupation, and business hereinafter named in this section is hereby declared to be a privilege, and the rate of taxation on such privilege shall be as hereinafter fixed, which privilege tax shall be paid to the county court clerk as provided by law for the collection of revenue.

* * * * *

INTELLIGENCE OFFICES AND EMPLOYMENT AGENCIES.

Each office, per annum----- \$10.00

Approved April 15, 1907.

CHAPTER 593.—*Public printing to be done within the State.*

SECTION 1. Whatever printing is done by order of the legislature, or in pursuance of a law, for the State, is public printing, such as the printing of the journals and acts of the legislature, or whether it be in the shape of job work, [and] shall be done within the boundaries of the State: *Provided*, The printing can be contracted for and done in Tennessee as cheaply as elsewhere.

Approved April 15, 1907.

TEXAS.

ACTS OF 1907.

CHAPTER 32.—*Railroads—Headlights for locomotives.*

SECTION 1. It shall be the duty of every railroad corporation or receiver or lessee thereof, operating any line of railroad in this State, within six months after the passage of this act, or within such additional time as may be prescribed by order of the railroad commission of Texas, after a proper showing of their inability to comply by the railroad has been made, to equip all locomotive engines used in the transportation of trains over said railroad with electric headlights of not less than 1500 candlepower, measured without the aid of a reflector, or other headlights of not less than 1500 candlepower, measured without the aid of a reflector: *Provided*, That this act shall not apply to locomotive engines regularly used in the switching of cars or trains.

SEC. 2. Any railroad company or the receiver or lessee thereof, doing business in the State of Texas, which shall violate the provisions of this act, shall be liable to the State of Texas for a penalty of not less than one hundred dollars, nor more than one thousand dollars for each offense, * * * .

Approved March 20, 1907.

CHAPTER 41.—*Sufficient crew required for railroad trains.*

SECTION 1. It shall be unlawful for any railroad company doing business in the State of Texas to run over its road, or part of its road outside of the yard limits, any passenger train with less than a full passenger crew, consisting of four persons, one engineer, one fireman, one conductor and one brakeman.

SEC. 2. It shall be unlawful for any railroad company doing business in the State of Texas to run over its road, or part of its road, outside the yard limits, any freight train, gravel train or construction train with less than a full crew, consisting of five persons, one engineer, one fireman, one conductor and two brakemen.

SEC. 3. It shall be unlawful for any railroad company doing business in the State of Texas to run over its road, or part of its road, outside of the yard limits, any light engine without a full train crew, consisting of three persons, one engineer, one fireman and one conductor: *Provided*, That nothing in this act shall be construed as applying in the case of disability of one or more of any train crew while out on the road between division terminals, or to switching crews in charge of yard engines or which may be required to push trains out of yard limits.

SEC. 4. Any railroad company doing business in the State of Texas which shall violate any of the provisions of this act shall be liable to the State of Texas for a penalty of not less than one hundred dollars or more than one thousand dollars for each offense, * * * .

Approved March 25, 1907.

CHAPTER 51.—*Hours of labor of employecs on railroads.*

SECTION 1. It shall hereafter be unlawful for any corporation or receiver operating any line of railroad in whole or in part in this State, or any officer, agent or representative of such corporation or receiver to require or knowingly

permit any conductor, engineer, fireman, brakeman, train dispatcher or telegraph operator, who has been on duty for fourteen consecutive hours to perform any work until he has had at least eight hours off duty, except in cases where such fourteen hours expires while a train is between stations or at a station where there are no facilities for sidetracking such train, in either of which events the conductor, engineer, fireman, or brakeman, or all of them, may be permitted to proceed with such train to the first station where such facilities can be had, but no further: *Provided, however,* That in case said fourteen hours shall expire when a train is within twenty miles of a terminal toward which it is going, or within twenty miles of its destination, the aforementioned employees operating such train may be permitted to proceed to such terminal or destination, but in such case shall not be required to do any switching or other work which would in any manner retard them in speedily reaching such terminal or destination: *Provided further,* That this act shall not apply in case of casualty upon such railroad, directly affecting such employee, nor shall it apply to sleeping car companies.

SEC. 2. It shall hereafter be unlawful for any corporation or receiver operating any line of railroad in whole or in part in this State, or any officer, agent, or representative of such corporation or receiver to require or knowingly permit any conductor, engineer, fireman, brakeman, train dispatcher or telegraph operator, who has been on duty for fourteen consecutive hours and who has gone off duty, to again go on duty or perform any work for such corporation or receiver until he has had at least eight hours off duty.

SEC. 3. Any corporation or receiver operating a line of railroad in whole or in part within this State, who shall violate any of the provisions of this act shall be liable to the State of Texas in a penalty of not less than two hundred dollars nor more than one thousand dollars for each offense, and such penalties shall be recovered and suit therefor shall be brought in the name of the State of Texas in any court having jurisdiction of the amount in Travis County, Texas, or in any county into or through which said railroad may pass. Such suit or suits may be brought either by the attorney-general or under his direction or by the county attorney or district attorney of any county or judicial district into or through which said railroad may pass, and such attorney bringing any action under this act shall be entitled to a compensation of one-third of the total amount of penalties recovered.

SEC. 4. Any officer, agent or representative of any corporation or receiver operating any line of railroad in whole or in part within this State, who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction therefor shall be punished by a fine of not less than one hundred dollars, nor more than five hundred dollars for each offense, or by confinement in the county jail for not less than ten or more than sixty days, or by both such fine and imprisonment, and such person so offending may be prosecuted under this section, either in the county where such person may be at the time of the commission of the offense, or in any county where such employee has been permitted or required to work in violation of this act.

Approved April 1, 1907.

CHAPTER 67.—*Blacklisting.*

SECTION 1. Either or any of the following acts shall constitute a discrimination against persons seeking employment:

(1) Where any corporation or receiver of same, doing business in this State, or any agent or officer of any such corporation or receiver, shall blacklist, prevent, or attempt to prevent, by word, writing, sign[,] list or other means, directly or indirectly, any discharged employee, or any employee who may have voluntarily left said corporation's service, from obtaining employment with any other person, company or corporation, except by truthfully stating in writing on request of such former employee, the reason why such employee was discharged, or his relationship to such company ceased.

(2) Where any corporation or receiver of same, doing business in this State, or any officer or agent of such corporation or receiver, shall by any means, directly or indirectly communicate to any other person or corporation any information in regard to a person who may seek employment of such person or corporation, and fails to give such person, in regard to whom the communication may be made, within ten days after demand therefor, a complete copy of such communication, if in writing, and a true statement of such communication

if by sign, or other means, and the names and addresses of all persons or corporations to whom said communications shall have been made.

(3) Where any corporation or receiver of same, doing business in this State, or any agent or employee of such corporation or receiver, shall have discharged an employee, and such discharged employee demands a statement in writing, of the cause of his discharge, and such corporation, receiver, agent or employee thereof fails to furnish a true statement of same to such employee within ten days after such demand: *Provided*, That such demand by the employee for said statement shall be made in writing.

(4) Where any corporation or receiver of same, doing business in this State, or any agent or officer of same, shall have received any request, notice or communication, either in writing or by sign, word, list or otherwise, from any person, company or corporation, preventing or attempting or calculated to prevent the employment of a person seeking employment, and shall fail to furnish to such person seeking employment within ten days after a demand in writing therefor, a true statement of such request, notice or communication, and if in writing, a copy of same, and if a sign, the interpretation thereof, and the names and addresses of the person, company or corporation furnishing the same.

(5) Where any corporation or receiver of same, doing business in this State, or any officer or agent of such corporation or receiver discharging such employee shall have failed to give a discharged employee a true statement of the causes of his discharge within ten days after a demand in writing therefor, and shall thereafter furnish any other person or corporation any statement or communication in regard to such discharge, unless at the request of such discharged employee.

(6) Where any corporation or receiver of same, doing business in this State, or any officer or agent of such corporation or receiver shall discriminate against any person seeking employment on account of his having participated in a strike against another corporation.

(7) Where any corporation or receiver of same doing business in this State, or any officer or agent of such corporation or receiver, shall give any information or communication in regard to a person seeking employment having participated in any strike, unless such person seeking employment violated the law during his participation in said strike or in connection therewith, and unless such information is given in compliance with subdivision 1 of section 1 of this act.

Sec. 2. Any and all discriminations against persons seeking employment as herein defined, are hereby prohibited and are declared to be illegal.

Sec. 3. Every foreign corporation violating any of the provisions of this act is hereby denied the right, and is prohibited from doing any business within this State, and it shall be the duty of the attorney-general to enforce this provision by injunction or other proceeding in the district court of Travis County in the name of the State of Texas.

Sec. 4. Each and every person, company or corporation, who shall in any manner violate any of the provisions of this act shall for each and every offense committed forfeit and pay the sum of one thousand (\$1,000) dollars, which may be recovered in the name of the State of Texas, in any county where the offense was committed, or where the offender resides, or in Travis County, and it shall be the duty of the attorney-general or the district or county attorney under the direction of the attorney-general to prosecute for the recovery of the same, and the fees of the prosecuting attorney for representing the State in proceedings under this act shall be over and above the fees allowed him under the general fee bill.

Sec. 5. In addition to the penalties and forfeiture herein provided for, every person violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction shall be punished by imprisonment in the county jail for not less than one month nor more than one year.

Sec. 6. In prosecution for the violation of any of the provisions of this act, evidence that any person has acted as the agent of a corporation in the transaction of its business in this State shall be received as prima facie proof that his act in the name, behalf or interest of the corporation of which he was acting as the agent, was the act of the corporation.

Sec. 7. Upon the application of the attorney-general or of any district or county attorney made to any justice of the peace in this State, and stating that he has reason to believe that a witness, who is to be found in the county of which such justice of the peace is an officer, knows of a violation of any of the provisions of this act, it shall be the duty of the justice of the peace to whom

such application is made, to have summoned and to have examined such witness in relation to violations of any of the provisions of this act, said witness to be summoned as provided for in criminal cases. The said witness shall be duly sworn, and the justice of the peace shall cause the statements of the witness to be reduced to writing and signed and sworn to before him, and such sworn statement shall be delivered to the attorney-general, district or county attorney upon whose application the witness was summoned. Should the witness summoned as aforesaid fail to appear or to make statements of the facts within his knowledge under oath, or to sign the same after it has been reduced to writing, he shall be guilty of contempt of court and may be fined not exceeding one hundred dollars, and may be attached and imprisoned in the county jail until he shall make a full statement of all the facts within his knowledge with reference to the matter inquired about. Any person so summoned and examined shall not be liable to prosecution for any violation of the provisions of this act about which he may testify fully and without reserve.

SEC. 8. Said written cause of discharge, if true, when so made by such agent, company or corporation, shall never be used as the cause for an action for libel, either civil or criminal, against the agent, company or corporation so furnishing same.

Approved April 5, 1907.

CHAPTER 122.—*Hours of labor of telegraph operators, etc., on railroads.*

SECTION 1. It shall be unlawful for any person, corporation or association operating a railroad within this State to permit any telegraph or telephone operator who spaces trains by the use of the telegraph or telephone under what is known and termed "block system" defined as follows: Reporting trains to another office or offices, or to a train dispatcher operating one or more trains under signals, and telegraph or telephone levermen who manipulate interlocking machines in railroad yards or on main tracks out on the lines connecting side tracks or switches, or train dispatchers in its service whose duties substantially, as hereinbefore set forth, pertain to the movement of cars, engines or trains on its railroad by the use of the telegraph or telephone in dispatching or reporting or receiving or transmitting train orders as interpreted in this section, to be on duty for more than eight hours in any twenty-four consecutive hours: *Provided*, That the provisions of this act shall not apply to railroad, telegraph or telephone operators at stations where the services of only one operator is needed.

SEC. 2. Any person, corporation or association that shall violate section 1 of this act shall pay a fine of one hundred dollars for each violation of this act.

SEC. 3. It shall be unlawful for any railroad, telegraph or telephone operator to work more than eight hours in twenty-four consecutive hours at such occupation, and any such operator violating this section shall pay a fine in any sum not less than twenty-five dollars nor more than one hundred dollars: *Provided*, That in case of an emergency any operator may remain on duty for an additional two hours.

Approved April 16, 1907.

CHAPTER 129.—*Actions for personal injuries—Notice.*

SECTION 1. * * * no stipulation in any contract between a person, corporation or receiver operating railroad or street railway or interurban railroad and an employee or servant requiring notice of a claim by an employee or servant for damages for injury received to the person, or by a husband, wife, father, mother, child or children of a deceased employee for his or her death, caused by negligence as a condition precedent to liability, shall ever be valid. * * *

Approved April 18, 1907.

CHAPTER 138.—*Employment of women and minors in saloons.*

SECTION 19. Every retail liquor dealer or malt liquor dealer, * * * who shall have in his employ about his place of business, * * * any minor * * * shall be guilty of a misdemeanor, and upon conviction therefor shall be punished by a fine of not less than ten dollars nor more than two hundred dollars, or by imprisonment in the county jail for not longer than sixty days, or by both such fine and imprisonment.

SEC. 25. No retail liquor dealer or retail malt dealer shall employ or suffer to be employed, any female as a servant, bartender or waitress, other than a member of his own family, in his place of business, * * * and any person violating the provisions of this section shall be deemed guilty of a misdemeanor and upon conviction shall be punished by imprisonment in the county jail for not more than twelve months or by a fine of not exceeding five hundred dollars, or both such fine and imprisonment.

Approved April 18, 1907.

CHAPTER 141.—*Examination, etc., of barbers.*

SECTION 1. It shall be unlawful for any person to follow the occupation of barber in this State unless he shall first have obtained a certificate of registration as provided for in this act: *Provided, however,* That nothing contained in this act shall apply to or affect any person who is now actually engaged in such occupation, except as hereinafter provided.

SEC. 2. A board of examiners to consist of three persons is hereby created to carry out and enforce the provisions of this act. Said board shall be appointed by the governor and shall consist of practical barbers who have been for at least five years prior to their appointment engaged in the occupation of barber in this State. Each member of said board shall serve a term of two years and until his successor is appointed and qualified, and shall take the oath provided for public officers. Vacancies shall be filled by the governor for the unexpired portion of this term.

SEC. 3. Said board shall elect a president, secretary and treasurer, shall have a common seal and shall have the power to administer oaths. The office of secretary and treasurer may be filled by the same person, in the discretion of the board of examiners. The secretary and treasurer shall each give a bond with two or more good and sufficient sureties, payable to and to be approved by the secretary of state in the sum of one thousand (\$1,000) dollars, conditions [conditioned] that they will each of them faithfully perform the duties of their respective offices.

SEC. 4. Each member of said board shall receive a compensation of three (\$3) dollars per day and actual expenses for actual service, and three (3) cents per mile for each mile actually traveled in attending the meetings of the board, which compensation shall be paid out of any moneys in the hands of the treasurer of said board: *Provided,* That said compensation and mileage shall in no event be paid out of the state treasury. Said board shall present annually to the governor, in the month of July, a detailed statement of the receipts and disbursements of the board during the preceding year.

SEC. 5. Said examining board shall hold practical examinations at least four times each year, said examinations to be held in cities in different parts of the State, distributed as evenly as possible, for the convenience of applicants, and such other examinations at such times and places as the examining board may from time to time determine. Whenever complaint is made to the board of examiners or to the state health officer that any barber shop within this State is kept in an unsanitary condition, or that a contagious disease has been imparted to any customer of such shop, a member of the board of examiners shall visit and inspect such shop, and if he finds such shop to be in an unsanitary condition, or finds that a contagious disease has been imparted to a customer of such shop, he shall proceed as provided in section 12 of this act.

SEC. 6. Every person now engaged as a barber in this State, shall within ninety (90) days after the approval of this act, file with the secretary of the board of examiners an affidavit setting forth his name, residence and length of time during which, and the place in which he has practiced such occupation, and shall pay to the treasurer of said board two (\$2) dollars, and a certificate of registration entitling him to practice said occupation in this State shall be issued to him subject to the provisions of this act.

SEC. 7. Any person not engaged as barber at the time of the passage of this act desiring to obtain a certificate of registration under this act shall make application to the board of examiners, therefor, pay to the treasurer of said board an examination fee of two (\$2) dollars, presenting himself at the next regular meeting of the board for the examination of applicants, and if he shows that he has studied the trade for two years as an apprentice under one or more practicing barbers, or practiced the trade for at least two years in this State or some other State in the United States, and he is possessed of the requisite skill in such trade to properly perform all the duties thereof, including his ability in

preparation of the tools, shaving, hair cutting and all the duties and services incident thereto, and of sufficient knowledge concerning the common diseases of the face and skin to avoid the aggravation and spreading thereof in the practice of said trade, his name shall be entered by the board on the register hereafter provided for and a certificate of registration shall be issued to him authorizing him to practice said trade in this State subject to the provisions of this act.

SEC. 8. Nothing in this act shall prohibit any person from serving as a barber apprentice under a barber authorized to practice his trade under this act: *Provided*, That any person desiring to so work as an apprentice, must apply to said board to have his name entered in a register kept by the board for such purpose, giving the date of his apprenticeship, and after serving two (2) years in the trade, he will then be eligible to become a registered barber, by complying with the provisions of section 7 of this act: *Provided*, That nothing in this act shall apply to the students of the State University or other schools of the State who are or may be making their way through school by serving as barber, or those serving as barber in any of the eleemosynary institutions of the State; nor shall the provisions of this section apply to persons serving as barber in towns of 1,000 inhabitants or less.

SEC. 9. Said examining board shall furnish to each person to whom a certificate of registration is issued, a card or insignia bearing the seal of the board and the signature of its president and secretary, certifying that the holder thereof is entitled to practice the occupation of barber in this State, and it shall be the duty of the holder of such card or insignia to post the same in a conspicuous place in front of his working chair where it may be seen by all persons whom he may serve.

SEC. 10. The examining board shall keep a record of all its proceedings; shall also show what action was had on all applications, whether the applicant was registered or rejected by examination or otherwise, and such books shall be prima facie evidence of all matters required to be kept therein. The examining board shall have power to adopt rules and regulations prescribing the sanitary requirements of barber shops; subject to the approval of the state health officer, and shall have said rules and regulations printed and transmit a copy to each proprietor of a barber shop in the State. The failure of the proprietor of any barber shop in the State to comply with said sanitary rules and regulations shall be sufficient cause for the revocation of his certificate of registration; subject to the provisions of section 12 of this act.

SEC. 11. Said board shall keep a register in which shall be entered the names of all persons to whom certificates are issued under this act, and said register shall at all times be open to public inspection.

SEC. 12. If any shop be found in an unsanitary condition, or if the holder of any certificate be charged with imparting any infectious disease, the board of examiners shall immediately notify the local health officer thereof, and such shop may be quarantined and the barber so charged shall not practice his occupation until such quarantine shall be removed by the health officer.

SEC. 13. To shave or trim the beard or cut the hair of any person for hire or pay to the person performing such service or any other person, shall be construed as practicing the occupation of barber within the meaning of this act.

SEC. 14. Any person practicing the occupation of barber in this State, without having obtained a certificate of registration, as provided for in this act, or employing a barber who has not such a certificate, or falsely pretending to be qualified to practice such occupation under this act, or violation of any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine not less than ten (\$10) dollars nor more than twenty-five (\$25) dollars.

Approved April 18, 1907.

CHAPTER 178.—*Mine regulations.*

SECTION 1. (a) Any shaft in process of sinking and any opening projected for the purpose of mining coal of all kinds shall be subjected to the provisions of this act.

(b) At the bottom of every shaft and every caging place therein a safe commodious passageway must be cut around said landing place, to serve as a traveling way by which employees shall pass from one side of the shaft to the other without passing under or on the cage.

(c) The upper and lower landings at the top of each shaft, and the openings of each intermediate seam from or to the shaft shall be clear and free from loose materials and shall be securely fenced with automatic or other gates or bars so as to prevent either men or materials from falling into the shaft.

(d) Every hoisting shaft must be equipped with substantial cages fitted to guide rails running from the top to the bottom. Said cages must be safely constructed, they must be furnished with suitable boiler iron covers to protect persons riding thereon from falling objects, and they must be equipped with safety catches. Every cage on which people are carried must be fitted with iron bars, rings, or chains in proper place and in sufficient number to furnish a secure handhold for every person permitted to ride thereon. At the top landing, cage supports, where necessary, must be carefully set and adjusted so as to work properly and securely hold the cages when at rest.

In all cases where the human voice can not be distinctly heard there shall be provided a metal tube or telephone from the top to the bottom of the shaft or slope through which conversation may be held between persons at the bottom and top of such shaft or slope, and that there shall also be maintained an efficient system of signaling to and from the top of the shaft or slope and each seam or opening.

Every underground place on which persons travel, worked by self-acting engines, windlasses or machinery of any description shall be provided with practical means of signaling between the stopping places and the ends of the plane, and shall further be provided, at intervals of not more than sixty feet, with sufficient manholes for places of refuge.

Every mine shall be supplied with props and timbers of suitable length and size, and if from any cause the timbers are not supplied when required, the miners shall vacate any and all such working places until supplied with timber needed.

All openings worked out or abandoned portions of every operated mine likely to accumulate explosive gases or dangerous conditions shall be securely gobbled and blocked off from the operated portions thereof so as to protect every person working in such mines from all danger that may be caused or produced by such worked out portions of such mines.

SEC. 2. (a) Throughout every mine there shall be maintained currents of fresh air sufficient for the health and safety of all men and animals employed therein, and such ventilation shall be produced by a fan or some other artificial means: *Provided*, A furnace shall not be used for ventilating any mine in which explosive gases are generated.

(b) The quantity of air required to be kept in circulation and passing a given point shall be not less than one hundred cubic feet per minute for each person and not less than three hundred cubic feet per minute for each animal in the mine, measured at the foot of the downcast, and this quantity may be increased at the discretion of the inspector whenever in his judgment unusual conditions make a stronger current necessary. Said current shall be forced into every working place throughout the mine so that all parts of the same shall be reasonably free from standing powder smoke and deleterious air of any kind.

(c) The measurement of the current of air shall be taken with an anemometer at the foot of the downcast, at the foot of the upcast and at the working face of each division or split of the air current.

(d) The main current of air shall be split or subdivided [so] as to provide a separate current of reasonably pure air to every one hundred men at work, and the inspector shall have authority to order separate currents for smaller groups of men if in his judgment special conditions make it necessary.

(e) The air current for ventilating the stable shall not pass into the intake air current for ventilating the working parts of the mine.

(f) Whenever the inspector shall find men working without sufficient air he shall at once give the mine manager or operator notice and a reasonable time in which to restore the current, and upon his or their refusal or neglect to act promptly the inspector may order the endangered men out of the mine.

SEC. 3. Immediate notice must be conveyed by the miner or mine owner to the inspector upon the appearance of any large body of fire damp in any mine, whether accompanied by any explosion or not, and upon the concurrence [occurrence] of any serious fire within the mine or on the surface.

SEC. 4. Cages on which men are riding shall not be lifted or lowered at a rate greater than six hundred feet per minute, except with the written consent of the inspector. No person shall carry any tools or material with him on a cage in motion, except for use in making repairs, and no one shall ride on a cage while

the other cage contains a loaded car. No cage having an unstable or self-dumping platform shall be used for the carriage of men or materials unless the same is provided with some convenient device by which said platform can be securely locked, and unless it is so locked whenever men or material are being conveyed thereon.

SEC. 5. No miner or other person shall carry powder into the mine except in the original keg or in a regulation powder can securely fastened, and the can in otherwise air-tight condition.

SEC. 6. It shall be the duty of the mine foreman to see that proper cut throughs are made in all the pillars at such distances as in the judgment of the mine inspector may be deemed requisite, not more than twenty yards nor less than ten yards apart, for the purpose of ventilation and the ventilation shall be conducted through said cut throughs into the rooms and entries by means of check doors made of canvas or other material, placed on the entries or in other suitable places, and he shall not permit any room to be opened in advance of the ventilating current. Should the mine inspector discover any room, air way or other working place being driven in advance of the air current contrary to the requirements of this section he shall order the workmen in such places to cease at once until the law is complied with.

SEC. 7. At any mine where the inspector shall find fire damp is being generated so as to require the use of a safety lamp in any part thereof, the operator of such mine upon receiving notice from the inspector that one or more such lamps are necessary for the safety of the men in the mines, shall at once procure and keep for use such number of safety lamps as may be necessary.

SEC. 8. It shall be unlawful for any miner, workman or other person knowingly or carelessly to injure any shaft, safety lamp, instrument, air course or brattice, or to obstruct or throw open an air way, or to carry any open lamp or lighted pipe or fire in any form into a place worked by the light of safety lamps or within three feet of any open powder, or to handle or disturb any part of the hoisting machinery, or to enter any part of the mine against caution, or to do any willful act whereby the lives or health of persons working in mines or the security of the mine machinery thereof is endangered.

SEC. 9. It shall be the duty of every operator to post on the engine house and at the pit top of his mine, in such manner that the employees of the mine can read them, rules not inconsistent with this act, plainly printed in the English language, which shall govern all persons working in the mine. And the posting of such notice, as provided, shall charge all employees of such mine with legal notice of the contents thereof.

SEC. 10. The owner or operator of every mine shall provide adequate and accurate scales for weighing coal, and it shall be the duty of the mine inspector to examine such scales and if same are not found to be accurate he shall notify the owner to repair same, and if such owner fails or refuses to repair same within a reasonable time said inspector shall institute proceedings under the law against the proper parties.

SEC. 11. The employees in any mine in this State shall have the right to employ a check weighman at their own option and their own expense.

SEC. 12. No miner or other person employed in a mine shall use any kind of oil other than a good quality of lard oil for lighting purposes, except when repairing downcast or upcast shafts.

SEC. 13. Any person who shall willfully violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine not exceeding five hundred dollars, or imprisonment in the county jail for a period not exceeding six months.

SEC. 14. For the purpose of securing efficiency in the mine inspection service a board of examiners, to be known as the state mining board, whose duty it shall be to make formal inquiry into and pass upon the practical and technical qualifications and personal fitness of persons seeking appointments as state inspector of mines, shall be appointed by the governor.

SEC. 15. Said board shall be composed of seven members, three of whom shall be practical miners, three shall be mine operators, and it shall be the first duty of the six members thus appointed to nominate to the governor the seventh member of said board: *Provided*, That if the six members aforesaid shall fail for a period of ten days after their appointment to so nominate the seventh member, the same shall be appointed by the governor. Such board shall be appointed by the governor within ninety days after the passage of this act. Said board shall hold office for a period of two years and until their successors have been appointed and qualified.

The board shall meet in the capitol building at Austin, within thirty days after its appointment and biennially thereafter, for the purpose of hearing applications for the office of state mining inspector. It shall be the duty of the board to thoroughly examine all applicants who may come before it, and to select from among such applicants the person who in its opinion is best qualified to perform the duties of state mining inspector, and upon the nomination of said board the governor shall appoint the person so recommended.

SEC. 17. The state mine inspector shall be a citizen of the United States, and shall have resided in the State of Texas for one year, of temperate habits, of good repute, a man of personal integrity, shall have attained the age of thirty years, and shall have had at least five years experience working in and around coal mines, and shall not have any pecuniary interest whatever in any mine in this State. He shall hold office for a period of two years unless sooner removed as provided herein.

SEC. 18. It shall be the duty of the state mining board to exercise supervision over the acts of the state mine inspector, and in the event of his incompetency or the neglect of his duty being proved to the board, said board shall recommend to the governor that he be removed from office and his successor shall be chosen as herein provided.

SEC. 19. The state mining board shall meet twice each year and at such time and place as the majority may select for the purpose of receiving reports from the inspector and instructing him in the performance of his duty.

SEC. 20. The members of the state mining board shall receive as compensation for their services the sum of five dollars per day for a period not exceeding thirty days in any one year and traveling expenses in going to and returning from board meetings.

SEC. 21. It shall be the duty of the state mine inspector to enforce the provisions of this act under the instruction of the state mining board, and to make report to said board at its semiannual meetings and oftener if required. He shall receive for his services the sum of fifteen hundred dollars per year, and actual traveling expenses incurred in the discharge of his duty: *Provided*, That his traveling expenses shall not in any one year exceed the sum of \$500.

Approved April 30, 1907.

UTAH.

ACTS OF 1907.

CHAPTER 33.—*Mine regulations—Care of injured persons.*

SECTION 1. At all mines in the State of Utah where ten or more men are employed, it shall be the duty of the operator or owners thereof to keep readily accessible a properly constructed stretcher, a woolen blanket, a waterproof blanket and a supply of linseed oil, antiseptic gauze, carbolated vaseline, sponges, soap, liniment, carbolic acid, rubber bandages, suitable towels and wash basins, all for the comfort and treatment of anyone injured in such mine.

SEC. 2. Any willful neglect, refusal or failure to do the things required to be done by the preceding section, or any attempt to obstruct or interfere with the complying with the provisions of this act, shall be deemed a misdemeanor punishable by a fine in any sum less than three hundred dollars, or, by imprisonment in the county jail not to exceed six months, or by both such fine and imprisonment.

Approved this 11th day of March, 1907.

CHAPTER 76.—*Interference with employment.*

SECTION 1. It shall be unlawful for any person, persons, association of persons, combination of persons, or body of persons to interfere with the rights of any individual engaged in labor, to exercise his full privileges under the Constitution of this State or of the United States, as to where he shall be employed, by whom he shall be employed and at what compensation he shall be employed.

SEC. 2. Anyone violating the provisions of this act shall be guilty of a misdemeanor.

Approved this 14th day of March, 1907.

CHAPTER 131.—*Bureau of statistics.*

SECTION 1. Section 1, chapter 55 Laws of Utah 1901 is heretofore read as follows:

Section 1. A state bureau of statistics is hereby created and the said bureau shall be under the control of the state auditor. The state auditor shall be ex officio the commissioner of said state bureau of statistics.

SEC. 3. The state auditor who by this act is made ex officio the commissioner of the state bureau of statistics shall appoint a chief clerk or deputy commissioner who shall receive such compensation as [is] provided by law.

Approved this 23d day of March, 1907.

CHAPTER 154.—*Examination, etc., of barbers.*

SECTION 1. Sections 1, 5, 6, 9, 10, 11, 13 and 14 of chapter 137, Laws of Utah, 1903, are hereby amended to read as follows:

Section 1. It shall be unlawful for any person to follow the occupation of a barber, barber's apprentice or to conduct a barber shop, barber school or barber college in this State unless he shall have first obtained a certificate of registration as provided in this act. A person so engaged less than six months shall be considered an apprentice and at the expiration of six months of such employment shall be subject to the provisions of this act as hereinafter provided. No person practicing the occupation of a barber in any barber school or college in this State shall serve a person afflicted with erysipelas, eczema, impetigo, syphilis, tuberculosis, or any other contagious or infectious disease. Any person so afflicted is hereby prohibited from being barbered in any barber shop, barber school or college in this State.

Any violation of this section will be considered a misdemeanor as provided for in this act.

Sec. 5. Such board shall have power to adopt reasonable rules and regulations prescribing the sanitary requirements of a barber shop, barber school or college, subject to the approval of the state board of health and to cause the rules and regulations so approved to be printed in a suitable form and to transmit a copy thereof to the proprietor of each barber shop, barber school or college in this State.

It shall be the duty of every proprietor or person operating a barber shop, barber school or college in this State to keep posted in a conspicuous place in his shop, school or college, so as to be easily read by his customers a copy of such rules and regulations. A failure of any such proprietor or manager to keep such rules so posted, or to observe the requirements thereof, shall be sufficient grounds for the revocation of his license, but no license shall be revoked without a reasonable opportunity being offered to such proprietor or manager to be heard in his defense. Any member of said board shall have power to enter and make examination of any barber shop, barber school or college in this State during business hours for the purpose of ascertaining the sanitary condition thereof. Any barber shop, barber school or college in this State in which tools, appliances and furnishings in use therein are kept in an unclean or insanitary condition so as to endanger health, is hereby declared to be a public nuisance and the proprietor thereof shall be subject to prosecution and punishment therefor. Each member of said board shall have power to administer oaths, and the board may at its discretion appoint deputies who shall exercise the powers herein granted to said board, said deputies to serve without pay.

Sec. 6. Each member of said board shall receive a compensation of four dollars per day for actual service, and ten cents for each mile actually traveled in attending the duties of the board, which compensation shall be paid out of any moneys in the hands of the treasurer of said board, after an allowance thereof by the board upon an itemized and verified claim thereof being filed with the secretary by the member claiming the same, but in no event shall any part of the expense of the board or any member thereof be paid out of the state treasury.

Sec. 9. Every person now engaged in the occupation of a barber in this State shall, within 90 days after the approval of this act, file with the secretary of said board an affidavit setting forth his name, residence and the length of time during which, and the place where he has practiced such occupation, and shall pay to the treasurer of said board one dollar, and a certificate of registration entitling him to practice said occupation thereupon shall be issued to him.

Sec. 10. Any person other than those mentioned in section 9 desiring to obtain a certificate of registration under this act shall make application to said board therefor, and shall pay to the treasurer of said board an examination fee of \$5.00, and shall present himself at the next regular meeting of the board for the examination of applicants, whereupon said board shall proceed to examine said person, and being satisfied that he is above the age of 16 years, of good moral character, free from contagious or infectious diseases; that he had either studied the occupation for six months as an apprentice under a qualified practicing barber, or that he has studied the occupation in a barber school or college as defined by this act, for six months or has practiced the occupation for at least six months and is possessed of a requisite skill in said occupation to properly perform all the duties thereof, including his ability in the preparation of tools, shaving, hair cutting and a thorough knowledge of the sanitary requirements of a barber shop, barber school or college, and all the duties and services incident thereto, his name shall then be entered by the board in the register hereinafter provided for, and a certificate of registration shall be issued to him authorizing him to practice said occupation in this State: *Provided*, That whenever it appears that the applicant has insufficient knowledge of the sanitary requirements of a barber shop, school or college to prevent the spread of disease, the board may withhold from him a qualified barber certificate if it shall appear that he is not qualified to practice the said occupation.

Sec. 11. A barber school or college is hereby declared to be a school or college conducted by suitable persons who are authorized to practice the occupation of a barber in this State, and in which all instruction is given by competent persons so authorized and in which the course and period of training shall comply with the rules and regulations of said board specifically adopted for the government of barber schools or colleges.

Sec. 13. Every apprentice, in order to avail himself of the provisions of this act, must file with the secretary of the board a statement in writing showing the name and place of business of his employer, the date of commencement of employment with him, and the full name and age of said apprentice, and shall pay to the treasurer of said board a fee of one dollar.

Sec. 14. Said board shall furnish to each person to whom a certificate of registration is issued and to each registered apprentice a card or insignia bearing the seal of the board and the signature of its president and secretary, certifying that the holder thereof is entitled to practice the occupation of a barber's apprentice in this State, and it shall be the duty of the holder of such card or insignia to post the same in a conspicuous place in front of his working chair, where it may readily be seen by all persons whom he may serve. Said card or insignia shall be renewed on or before the first day of July of each year and the holder of said certificate of registration or apprentice card shall pay to the secretary of said board the sum of one dollar for such renewal card or insignia. Upon the failure of any holder of a certificate of registration or apprentice card to apply for a renewal of his card or insignia on or before the first day of July in each year, his said certificate or apprentice card may be revoked by said board, subject to the provisions of section 16 of this act.

Approved this 25th day of March, 1907.

WASHINGTON.

ACTS OF 1907.

CHAPTER 20.—*Hours of labor of employes on railroads.*

SECTION 1. It shall be unlawful for any common carrier by railroad or any of its officers or agents, to require or permit any employee engaged in or connected with the movement of any train to remain on duty more than sixteen consecutive hours, except when by casualty occurring after such employee has started on his trip; or, except by accident or unavoidable delay of trains scheduled to make connection with the train on which such employee is serving, he is prevented from reaching his terminal; or, to require or permit any such employee who has been on duty sixteen consecutive hours to go on duty without having had at least ten hours off duty; or, to require or permit any such employee who has been on duty sixteen hours in the aggregate in any twenty-four

hour period to continue on duty without having had at least eight hours off duty within the twenty-four hour period.

SEC. 2. That any such common carrier, or any of its officers or agents violating any of the provisions of this act is hereby declared to be guilty of a misdemeanor, and upon conviction thereof shall be liable to a penalty of not less than one hundred or more than one thousand dollars for each and every such violation to be recovered in a suit or suits to be brought by the attorney-general; and it shall be the duty of the attorney-general to bring such suits upon duly verified information being lodged with him of such violation having occurred, in any superior court; and it shall also be the duty of the railroad commission to fully investigate all cases of the violation of this act, and to lodge with the attorney-general information of any such violation as may come to its knowledge.

Approved by the governor February 18, 1907.

CHAPTER 128.—*Employment of children—Age limit.*

[See Bulletin No. 73, p. 806.]

CHAPTER 138.—*Railroads—Blocking frogs, etc.*

SECTION 1. Section 1 of an act * * * approved March 6th, 1899, is hereby amended to read as follows:

Section 1. Any person or persons, railroad companies or corporations, owning or operating a railroad or railroads in this State, shall be and are hereby required on or before the first day of October, 1899, to so adjust, fill, block and securely guard the frogs, switches and guard rails on their roads as to protect and prevent the feet of employees and other persons from being caught therein. Any railroad operating within this State, shall not employ or use as flagman any person or persons who can not read, write and speak the English language.

Approved by the governor March 12th, 1907.

CHAPTER 175.—*Saw guards in shingle mills.*

SECTION 1. An act entitled "An act for the purpose of protecting knot sawyers in shingle mills, and requiring owners and operators of shingle mills to protect knot saws with metallic saw guards, imposing penalties for failure to do so, and declaring the law of negligence in cases where any person is injured by any knot saw not protected by metallic saw guard," approved March 1st, 1895, is hereby repealed.

Approved by the governor March 15, 1907.

CHAPTER 200.—*Inspection of steam vessels.*

SECTION 1. The commissioner of labor shall be charged with the administration of the provisions of this act, shall employ the necessary inspectors to enable him to carry said provisions into effect, and shall exercise supervision over them in the performance of their duties.

SEC. 2. The commissioner of labor shall annually, or oftener if he has good cause to believe it reasonable, inspect, or cause to be inspected, every steam vessel or other vessel operated by machinery engaged in carrying passengers for hire or towing for hire, excepting vessels which are subject to inspection under the laws of the United States, examine carefully her hull, boats and other equipment, examine her engine and boilers, ascertain how long it will be safe to use the same, determine the pressure of steam to be allowed and so regulate the fusible plugs, safety valves and steam cocks as to insure safety, and he may require such changes, repairs and improvements to be adopted and used as he may deem expedient for the contemplated route. He shall also fix the number of passengers that may be transported. He shall also, whenever he deems it expedient, visit any vessel licensed under this act and examine into her condition for the purpose of ascertaining whether or not any party thereon having a certificate from him has conformed to and obeyed the conditions of such certificate and the provisions of this act. The owner, master, pilot, captain or engineer of such vessel shall answer all reasonable questions, and shall give all the information in his or their power, in regard to said vessel, her machinery and the manner of managing the same. In case of damage by fire or by explo-

sion or by means of an electrical apparatus, he may investigate the cause thereof, and if found by him to have been occasioned by a violation of any of the provisions of this act, or of the orders, regulations and requirements issued by him, he shall so certify to the prosecuting attorney of the county where such violation occurred, together with the names of the persons guilty thereof and of the witnesses.

SEC. 3. The commissioner shall also test the boilers of all steam vessels, before the same shall be used, and at least once in every year thereafter. In subjecting to the hydrostatic test, boilers called and usually known under the designation of high pressure boilers, the hydrostatic pressure applied must be in proportion of one hundred and fifty pounds to the square inch to one hundred pounds to the square inch of the steam pressure allowed. And in subjecting to the hydrostatic test, that class of boilers usually designated and known as low pressure boilers, the commissioner shall allow as the working power of each new boiler, a pressure of only three-fourths the number of pounds to the square inch, to which it shall have been subjected by the hydrostatic test, and found to be sufficient therefor; but should said commissioner be of the opinion that such boiler, by reason of its construction or material will not safely allow so high a working pressure he may, for reasons specifically stated in his certificate, fix the working pressure of such boiler at less than three-fourths of said test pressure; and no boiler or pipe, or any of the connections therewith, shall be approved, which is made in whole or in part, of bad material, or is unsafe in its form, or dangerous from defective workmanship, age, use or other cause. In addition to the hydrostatic test as herein provided, the commissioner may cause a hammer test to be made and an internal examination of such boiler or boilers so tested, whenever deemed necessary. Any boiler having been in use ten years or more may be drilled at the bottom of shell or boiler, and also at such other points as the inspectors may direct to determine the thickness of such material at those points, and the general condition of such boiler or boilers at the time of inspection and the steam pressure allowed shall be determined by such ascertained thickness and general condition of the boiler. He shall also see that all connections to the said boiler or engines are of suitable material, size and construction; and that the boiler, machinery and appurtenances are such as may be employed with safety in the service to be performed. He shall also satisfy himself that the safety valves are of suitable dimensions and that the weights of the same are properly adjusted, so as to allow no greater pressure than the maximum amount prescribed by him; and that there is a sufficient number of gauge cocks, properly attached to the boiler, so as to indicate the quantity of water therein; and suitable steam gauges to correctly show the amount of steam carried; and as to any other matter connected with such steam vessel or the machinery thereof, that to said commissioner shall seem necessary to the safety of her passengers and crew. And he shall make such inspection, examination and test of naphtha launches and electric launches and their apparatus and machinery, as will enable him to determine whether they can be safely used in navigation.

SEC. 4. The commissioner, if satisfied that such vessel is in all respects safe and conforms to the requirements of this act, shall make and subscribe duplicate certificates, setting forth the age of the vessel, the date of inspection, the name of the vessel, the name of the owner, the master, the number of licensed officers and crew which he deems necessary to manage the vessel with safety, the number of boats and life-preservers required, and the number of passengers that she can safely carry, and if a steam vessel, the age of the boiler, and the pressure of steam she is authorized to carry. One of such certificates shall be kept posted in some conspicuous place on the vessel to be designated by the commissioner in the certificate and the other copy shall be kept by the commissioner and by him recorded in a book to be kept for that purpose. If the commissioner refuses to grant a certificate of approval, he shall make a statement in writing, giving his reasons for such refusal, and deliver the same to the owner or master of the vessel.

SEC. 6. All steamboats and other vessels to which this act is applicable, shall hereafter be so constructed that the woodwork about the boilers, chimneys, fire boxes, cook houses, stove and steam pipes, or any machinery or apparatus involving danger of fire, where such woodwork is exposed to ignition, shall be so shielded by some incombustible material, that the air may circulate freely between such material and woodwork or other ignitable substances, and before granting a certificate of inspection, the commissioner shall require that all other

necessary provisions be made throughout such vessel, as he may judge expedient to guard against loss or damage by fire.

SEC. 13. Whoever intentionally loads or obstructs, or causes to be loaded or obstructed, in any way, the safety valve of the boiler, or employs any other means or device whereby the boiler may be subjected to a greater pressure than the amount allowed by the commissioner's certificate, or intentionally deranges or hinders the operation of any machinery or device employed to denote the stage of the water or steam in any boiler, or to give warning of any approaching danger, or intentionally permits the water to fall below the prescribed low water limit of the boiler, shall forfeit to the State of Washington the sum of five hundred dollars for each violation.

SEC. 14. Every person employed as master, pilot or engineer on board of a steam vessel or a vessel propelled by machinery, carrying passengers for hire or towing for hire, shall be examined by the commissioner as to his qualifications, and if satisfied therewith he shall grant him a license for the term of one year for such boat, boats or class of boats as said commissioner may specify in such license. In a proper case, the license may permit and specify that the master may act as pilot, and in case of small vessels also as engineer and pilot. The license shall be framed under glass, and posted in some conspicuous place on the vessel on which he may act. Whoever acts as master, pilot or engineer, without having first received such license, or upon a boat or class of boats not specified in his license, shall be liable to a penalty of fifty dollars for each day that he so acts, except as in this act otherwise specified, and such license may be revoked by the commissioner for intemperance, incompetency or willful violation of duty.

SEC. 20. No master, engineer or other person having charge of the boiler or apparatus for the generation of steam of any steamboat or vessel shall create, or allow to be created any undue or unsafe quantity of steam in order to increase the speed of such boat or to excel another boat in speed. Any person violating provisions of this section shall forfeit to the State of Washington the sum of five dollars for every such violation.

SEC. 21. Every master of a steamboat or vessel who shall violate any of the preceding sections of this act shall, for every such violation, forfeit to the State of Washington the sum of two hundred and fifty dollars, unless a different penalty is prescribed.

SEC. 23. The master of every vessel shall keep a copy of the preceding sections of this act posted in a conspicuous place on such vessel for the inspection of all persons on board thereof. Every master violating the provisions of this section shall forfeit to the State of Washington, twenty-five dollars, and the additional sum of twenty-five dollars for each month while such violation continues.

SEC. 24. The commissioner shall on or before the first day of January in each year, make a verified report to the governor, containing a detailed statement of the names and number of vessels examined and licensed, the names and number of vessels to which licenses were refused and stating the reasons for the refusal, the names and number of persons examined and licensed, the names and number to whom licenses were refused and stating the reasons therefor, and may include in such report any other information he may deem desirable.

SEC. 26. For each inspection provided for in sections two and three of this act the owner or master of each vessel shall pay the commissioner of labor an inspection fee, which shall not be less than five dollars, nor more than twenty dollars, to be fixed by the commissioner of labor with reference to the size of the vessel inspected. For each license issued under section eighteen of this act the person so licensed shall pay to the commissioner of labor the sum of five dollars. All of the fees received from this source shall be accounted for by the commissioner of labor to the state treasurer, and credited to the general fund.

SEC. 27. The inspectors provided for in this act shall receive seven dollars per diem for the time actually engaged in making the inspections and examinations provided for herein, and shall be paid necessary traveling expenses when making such inspections and conducting such examinations at other than the domicile of said inspectors.

SEC. 28. Any inspector duly employed by the commissioner of labor for the execution of any of the provisions of this act, shall be deemed to be a deputy of said commissioner for the purposes hereof, and may perform any act and exercise any authority herein prescribed for the commissioner of labor.

Approved by the governor March 15th, 1907.

CHAPTER 205.—*Inspection of factories, etc.*

[See Bulletin No. 73, pp. 969 to 972.]

CHAPTER 224.—*Railroad employees—Purchase of uniforms.*

SECTION 1. It shall be unlawful for any railroad or other transportation company doing business in the State of Washington, or of any officer, agent or servant of such railroad or other transportation company, to require any conductor, engineer, brakeman, fireman, purser, or other employee, as a condition of his continued employment, or otherwise to require or compel, or attempt to require or compel, any such employees to purchase of any such railroad or other transportation company or of any particular person, firm or corporation or at any particular place or places, any uniform or other clothing or apparel, required by any such railroad or other transportation company to be used by any such employee in the performance of his duties as such; and any such railroad or transportation company or any officer, agent or servant thereof, who shall order or require any conductor, engineer, brakeman, fireman, purser, or other person in its employ, to purchase any uniform or other clothing or apparel as aforesaid, shall be deemed to have required such purchase as a condition of such employee's continued employment.

SEC. 2. Any railroad or other transportation company doing business in the State of Washington, or any officer, agent or servant thereof, violating any of the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine in any sum not less than one hundred dollars (\$100) nor more than five hundred dollars (\$500), or by imprisonment in the county jail of the county where the misdemeanor is committed, not exceeding six months.

Approved by the governor March 16th, 1907.

CHAPTER 226.—*Railroads—Accidents—Safety appliances.*

SECTION 10. There shall be added to said act [chapter 81, Acts of 1905] to be designated as section 28 the following:

Section 28. The [railroad] commission is hereby authorized and directed to investigate all accidents that may occur upon any railroad operating in this State resulting in loss of life to any passenger or employee. Said commission is hereby authorized to administer oaths and examine such witnesses as it may deem necessary and proper to thoroughly ascertain the cause and for the purpose of fixing the responsibility therefor. Such examination and investigation may be made by the commission or any one of the commissioners, or the same may be made by its inspector of tracks and equipment, and such inspector shall have the right to administer oaths and examine witnesses in case the investigation is made by him. The commission shall report to the governor from time to time the result of all such investigations.

SEC. 13. There shall be added to said act to be designated as section 31 the following:

Sec. 31. It shall be unlawful for any railroad or railway corporation or company owning and operating, or operating, or that may hereafter own or operate, a railroad in whole or in part in this State to knowingly or negligently use or operate any car, tender or locomotive, that is defective, or any car or locomotive upon which the machinery or attachments thereto belonging are in any manner defective, or to knowingly operate its train over any defective or dangerous track, bridge or structure.

SEC. 14. There shall be added to said act to be designated as section 32 the following:

Sec. 32. Every railroad corporation owning or operating a railroad or part of a railroad in this State shall on or before the first day of January, 1908, equip and furnish all cars owned or leased and used by it in its service in this State with automatic couplers, coupling automatically, which can be coupled and uncoupled without the necessity of men going between the ends of the cars, and shall equip, furnish and operate all cars in its passenger service, and not less than 80 per cent. of such cars in its freight service with perfectly acting air brakes, and also with good and sufficient hand brakes, and in such a manner as to enable the engineer under ordinary conditions to control the speed of the train without the use of hand brakes, and no freight train shall after such date be run by any such railroad corporation over any part of its road lying within this State, unless the cars composing such freight train are so furnished and

equipped. All freight cars shall be equipped and provided with proper grab irons, ladders and stirrups, securely bolted on so as to enable the employees to climb upon and off such cars with safety: *Provided, however,* That this section shall not apply to boarding and outfit cars when moved as work trains, or to trains consisting wholly of logging trucks and a passenger car or caboose, or to freight trains consisting of not to exceed fifty per cent. of logging trucks.

SEC. 15. There shall be added to said act to be designated as section 33 the following:

Sec. 33. An inspector of safety appliances and tracks, bridges and structures shall be appointed by the railroad commission of Washington, at a salary of not to exceed two thousand dollars per annum. Such inspector shall not be an officer of any railroad operating in this State, nor shall he be interested, directly or indirectly, in the stock or bonds of any railroad company, and he shall have had at least seven years actual experience in the operating department of some railroad. Before entering on his duties, the said inspector shall give a bond to the State of Washington in the sum of five thousand dollars secured by a bond and security company acceptable to the railroad commission conditioned for the faithful performance of his duties, and shall make and file an affidavit that he is not an officer or director of any railroad company, and is not directly or indirectly interested in the stock or bonds of any railroad company, and such other facts as are required of employees of the State.

SEC. 16. There shall be added to said act to be designated as section 34 the following:

Sec. 34. It shall be the duty of the inspector to inspect the couplers, air brakes and automatic power brakes found on the cars and engines, and the grab irons, ladders, stirrups and hand brakes on all freight cars of any railroad in Washington, and make such report of his inspection to the railroad commission as it may order and require, reporting all cars, tenders and engines, giving the number of the same, the road on which they are found and the road owning same if known which is found to have a defective coupler, brake or other defect rendering the operation thereof in any way dangerous, particularly describing such defects. He shall on discovering a defective coupler, brake or other defect rendering the use of such car, tender or engine dangerous immediately report the same to the superintendent of the road on which it is found and to the agent thereof at the nearest station, describing the defect. Such inspector may, on the discovery of the defective coupler, brake or other defect rendering the use of such car, tender or engine dangerous condemn such car, tender or engine, and order the same out of service until repaired and put in good working order. He shall in addition thereto inspect the tracks, bridges, and structures of all lines of railroad operating in this State, and in case he finds such track, bridge or structure defective or unsafe in any particular, he shall report such condition to the railroad commission and in addition thereto shall report the same to the divisional superintendent of such railroad. In case any track is found so defective as to be dangerous to the employees or traveling public for a train or trains to be operated over the same, the inspector is hereby authorized to condemn such track, bridge, or structure and notify the railroad commission and the railroad divisional superintendent of such road of his action concerning the same, reporting in detail the defects complained of, and the work and improvements necessary to be done to repair such defects. He shall also report to the railroad commission of Washington the violation of any law governing, controlling or affecting the conduct of railroads within this State. Such inspector shall have the right and privilege of riding upon any engine either on passenger or freight trains, or on caboose of freight train for the purpose of inspecting the track of any road in this State: *Provided,* That the engineer or conductor in charge of any such engine or caboose may require such inspector to produce his authority under the seal of the railroad commission of Washington showing that he is such inspector. The inspector shall be an employee of the railroad commission of Washington, and he shall perform in addition to the duties above described such other and further duties as the commission may require of him.

SEC. 17. There shall be added to said act to be designated as section 35 the following:

Sec. 35. Whenever the railroad commission of Washington has reasonable grounds to believe either on complaint made to it or otherwise that any of the tracks, bridges or other structures of any railroads in this State, or the couplers, air brakes, or automatic power brakes of any cars, tenders and engines, or the grab irons, ladders, and stirrups of any freight car used in this State are in a condition which renders them or any of them dangerous or unfit

for the transportation of passengers or the carrying of freight, it shall forthwith cause the same to be inspected and examined, and if on such examination of said commission or its inspector or agents it is of the opinion that any such tracks, bridges, structures, cars, tenders or engines are unfit for the transportation of passengers and freight with safety, it shall immediately give to the superintendent or other executive officer of the company operating such road notice of the condition thereof and of the repairs or reconstruction necessary to place the same in a safe condition, and it may also prescribe the rate of speed for trains passing over such dangerous or defective track, bridge or other structure until the repairs or reconstruction required are made, and may also prescribe the time within which such repairs or reconstructions must be made, or if in its opinion it is needful or proper, it may forbid the running of passenger trains over such defective track, bridge or structure until such repairs are made. If any superintendent or other executive officer receiving such notice and order neglects for two days after receiving the same to direct the proper subordinate officer to run the trains over such defective track, bridge or other structure at a speed not greater than that so prescribed, or if the running of such trains is forbidden, then to stop running trains over the same, or if any engineer, conductor or other employee knowingly disobeys such order, every superintendent, officer, engineer, conductor or employee so offending shall be fined in any sum not exceeding five hundred dollars, or be imprisoned for any period not exceeding one year, or both, at the discretion of the court; and the company operating such road, if it neglects or without good cause fails to make the repairs or reconstruction prescribed by the commission in the time limited shall for each day that such repair or reconstruction is delayed beyond the time prescribed, forfeit and pay to the State the sum of one hundred dollars. * * *

Sec. 18. There shall be added to said act to be designated as section 36 the following:

Sec. 36. Any railroad whose superintendent, officer or agent shall receive such notice of a defective coupler, brake or other defect rendering the use of such car, tender or engine dangerous shall cause the same to be immediately repaired. On receiving from the inspector an order condemning any car, tender or engine, the employees of the road in charge of said car, tender or engine shall put the same out of service at the first freight divisional terminal, or, in case the inspector so orders, at the first station reached. Any railroad whose superintendent, officer or agent shall receive notice of a defect in the track, or any bridge or other structure, shall cause the same to be immediately repaired and on receiving from the commission an order condemning the track, bridge or structure, no train excepting for the purpose of repairing shall be run over the same until the defects pointed out are remedied and repaired.

Sec. 19. There shall be added to said act to be designated as section 37 the following:

Sec. 37. It shall be the duty of the general manager, superintendent or other proper officer of every railroad operating in this State to make to the railroad commission of Washington at its office a monthly report under oath of all the collisions of trains, or where any train or part of a train accidentally leaves the track, and of all accidents which may occur to its passengers or employees while in the service of such road and actually on duty, which report shall state the nature and cause thereof and the circumstances connected therewith: *Provided, however,* That neither said report nor any part thereof shall be admitted as evidence or used for any purpose against such railroad so making such report in any suit or action for damages growing out of any matter mentioned in said report; that the railroad commission of Washington is hereby authorized to prescribe for such railroad a method and form of making the report in this section provided.

Sec. 20. There shall be added to said act to be designated as section 38 the following:

Sec. 38. Any railroad, divisional superintendent, agent, officer or employee of any railroad operating in this State who shall willfully and knowingly violate any of the provisions of this act shall be deemed guilty of a misdemeanor and on conviction thereof shall be fined in any sum not exceeding five hundred dollars.

Approved by the governor March 16th, 1907.

CHAPTER 231.—*Employment of children—School attendance.*

[See Bulletin No. 73, p. 806.]

WEST VIRGINIA.

ACTS OF 1907.

CHAPTER 59.—*Hours of labor of telegraph operators, etc., on railroads.*

SECTION 1. It shall be unlawful for any person, corporation or association, operating a railroad within this State to permit any person employed by them, or on their railroad, in the capacity of telephone or telegraph operator, whose duty it is to space or block trains or engines, or handle train orders governing the movement of trains or engines, or handling interlocking switches governing the movement of trains or engines, to permit such telephone or telegraph operator so employed to be on duty more than eight hours in any twenty-four consecutive hours: *Provided*, That the provisions of this act shall apply only to such parts of a railroad where three or more passenger trains pass each way in twenty-four consecutive hours, or where ten or more freight trains pass each way in twenty-four consecutive hours, or at any office where said telegraph or telephone operators are employed twenty or more hours in twenty-four consecutive hours: *And provided further*, That in case of necessity caused by the sickness of any such operators or by an accident on such railroad, such telephone and telegraph operators may be permitted to be on duty for a period of twelve consecutive hours in any twenty-four consecutive hours, but such extension of time shall extend only for a period long enough to enable such railroad company to supply the required number of operators at such office, and shall in no case extend over a period of more than two days, nor under this provision shall it be lawful for any telegraph or telephone operator to be on duty twelve consecutive hours in any twenty-four consecutive hours for more than three times in any calendar month; but nothing in this act shall prevent any such company and operator agreeing to a longer day than eight hours, but in no case shall any such operator be permitted to be on duty longer than twelve consecutive hours in any twenty-four consecutive hours under such agreement.

SEC. 2. Any person, corporation or association convicted of violating the provisions of this act shall be guilty of a misdemeanor and pay a fine of one hundred dollars for the first offense, and for each offense committed after the first conviction hereunder, pay a fine of three hundred dollars.

Approved by the governor February 25, 1907.

CHAPTER 78.—*Mine regulations.*

SECTION 1. There is hereby created an executive department to be known as the "department of mines" which shall have for its purpose the supervision of the execution and enforcement of all State laws pertaining to the inspection of mines, heretofore and hereafter enacted for the safety of persons employed within or at the mines within this State, and the protection of mine property and other property used in and in connection therewith; and the said department of mines shall be in charge of an official to be known as the chief of the department of mines, who shall have full charge of said department, and who shall superintend and direct the inspection of mines as herein provided and as provided by any other State law not in conflict with this act.

The chief of the department of mines shall keep a record of all inspections made by himself and the district mine inspectors, which shall be a permanent record properly indexed; the record of the department of mines shall at all times be open to inspection by any citizen of this State, and upon the request of the governor of the State the chief of the department of mines shall lay said records before said officer, also maps of mines furnished the chief of the department of mines by the district mine inspectors; any chief of the department of mines who shall violate any of the provisions of this act shall, upon conviction, be fined not less than twenty-five nor more than two hundred dollars, and may in the discretion of the court be imprisoned in the county jail not exceeding one year.

The chief of the department of mines shall be a male citizen of West Virginia, and shall be a competent person, having had at least eight years' experience in the working, ventilation and drainage of coal mines in this State, and

having a practical and scientific knowledge of all noxious and dangerous gases found in such mines, and to enable the said chief of the department of mines to perform his duties he shall have the same authority to visit, enter and examine, the mines as is conferred upon the district mine inspector, and he shall have the authority to call the assistance of any one of the district mine inspectors to any district in the State.

The present chief mine inspector of this State, who according to this act, is designated as chief of the department of mines, shall continue in office under the title of chief of the department of mines until July one, one thousand nine hundred and nine, the expiration of the term for which he was appointed as chief mine inspector, or until his successor shall be duly appointed and qualified, unless sooner removed as provided by law; and the governor of this State, shall with the consent of the senate, appoint a chief of the department of mines whose term of office shall begin July one, one thousand nine hundred and nine, and shall be for four years, or until his successor shall be duly appointed and qualified; and the governor, with the consent of the senate, shall each four years thereafter, appoint a chief of the department of mines for the term of four years or until his successor be appointed and qualified.

The salary of the chief of the department of mines shall be twenty-four hundred dollars, and traveling expenses, which shall be paid monthly out of the state treasury upon a requisition upon the state auditor, properly certified by the chief of the department of mines.

Sec. 2. Within thirty days after this act becomes a law the chief of the department of mines shall appoint such an additional number of district mine inspectors, which with those now in office, shall give one inspector for each mining district within the State, as hereinafter provided, whose term of office shall expire the first day of July, one thousand nine hundred and nine, or when their successors be appointed and qualified, unless sooner removed as provided by law, and he shall direct or prescribe in which of said districts each of said inspectors shall serve; and he shall each four years thereafter appoint one inspector for each of said districts.

The salary of each district mine inspector shall be eighteen hundred dollars per annum, and actual expenses; such salary and expenses shall be paid monthly out of the state treasury upon the approval of the chief of the department of mines: *Provided*, That before payment of such expenses shall be made to the inspector he shall file an account of such expenses, verified by his affidavit, showing that they accrued in the discharge of his official duties; every person so appointed district mine inspector must be a citizen of West Virginia, having a practical knowledge of mining and the proper ventilation and drainage of mines and a knowledge of the gases met with in coal mines, and must be a miner of at least six years' experience in coal mines, or having otherwise been engaged as an employee for six years within coal mines, and he shall not while in office, be interested as owner, operator, agent, stockholder, superintendent or engineer of any coal mine, and he shall be of good moral character and temperate habits. An inspector of mines shall be removed from office by the chief of the department of mines of this State for incompetency, neglect of duty, drunkenness, malfeasance and for other good causes.

Each of the district mine inspectors shall report in writing monthly to the chief of the department of mines the number and condition of all mines inspected by him during each month and shall deliver to the operator or operators of each mine inspected a certificate of inspection, and shall post a duplicate certificate at a prominent place of the operating company where it may be conveniently read by any of the mine employees; said duplicate certificate shall remain posted until a subsequent certificate is issued by the district mine inspector, and he shall visit each mine in his district at least once in every three months, or oftener if called upon in writing by ten men engaged in any one mine, or the owner, operator or superintendent of such mine and make a personal examination of the interior of all mines, and outside of the mine where any danger may exist to the workmen in their respective districts, and shall particularly examine into the condition of the mines as to ventilation, drainage and general safety and shall make a report of such examinations, and he shall see that all the provisions of the mining statutes are strictly carried out; and it shall be unlawful for any district mine inspector to appoint any deputy or other person to do and perform any work required of such inspector; any mine inspector failing to comply with the requirements of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than one hundred dollars nor more than five hundred dollars and be dismissed from office; the chief of the

department of mines and the district mine inspectors shall each before entering upon the discharge of his duties take oath of office prescribed by the constitution and shall furnish bond in the sum of two thousand dollars, with security to be approved by the governor, conditioned upon the faithful discharge of his duty, a certificate of which oath and bond shall be filed in the office of the secretary of state. Vacancies in the office of the department of mines or district mine inspector shall be filled by appointment for the unexpired term.

Sec. 3. Each district mine inspector shall, for each year ending the thirtieth day of June, make a written report to the chief of the department of mines of his proceedings, stating therein the number of mines in his district, the improvements made in and at the mines, the extent to which this act is obeyed or violated, and such other information in relation to mines and mining as he may deem of public interest, or as may be required of him by the chief of the department of mines; he shall also suggest or recommend such legislation on the subject of mining as he may think necessary; such report shall be filed with the chief of the department of mines on or before the thirtieth day of September next succeeding the year for which it was made; the chief of the department of mines shall annually make a full and complete written report of his proceedings to the governor of the State for the year ending the thirtieth of June; such report shall include the reports of the district mine inspectors, the number of visits and inspections made in the State by the district inspectors, the quantity of coal and coke produced in the State, the number of men employed, number of mines operated, ovens in and out of blast, improvements made, prosecutions, etc., and such other information in relation to the subject of mines, mining inspection and needed legislation as he may deem of public interest and beneficial to the mining interests of the State; such report shall be filed with the governor on or before the thirtieth day of December next succeeding the year for which it was made, and such report shall be printed upon the requisition of the governor and in order that the report shall be annually printed and distributed among the operators, miners and citizens of the State, the sum of fifteen hundred dollars annually is hereby appropriated out of the state treasury for this special purpose.

Sec. 4. The chief of the department of mines, by and with the approval of the governor, shall within thirty days after this act becomes a law, divide the State into twelve mining districts in such a manner as to equalize as far as practicable the work of each district inspector.

Sec. 5. The operator or agent of every coal mine shall, within six months after the passage of this act, make or cause to be made, unless already made and filed, an accurate map or plan of such mine, on a scale to be stated thereon, of one hundred or two hundred feet to the inch; such map or plan shall show the openings or excavations, the shafts, slopes, entries, air ways with darts or arrows showing direction of air currents, headings, rooms, pillars, etc., and such portions of such mine or mines as may have been abandoned, the general inclination of the coal strata, and so much of the property lines and the outcrop of the coal seam of the tract of land on which said mine is located, as may be within one thousand feet of any part of the workings of such mine; a true copy of such map or plan, shall within the six months aforesaid be delivered by such operator to the inspector of his district, to be preserved among the records of his office and turned over to his successor in office; but it is provided that in no case shall any copy of the same be made without the consent of the operator or his agent; and the original map, or a true copy thereof, shall be kept by such operator at the office of the mine, and open at all reasonable times for the examination and use of the inspector, and such operator shall, twice within every twelve months, and not more than seven months apart, while the mine is in operation, cause such mine to be surveyed and the map thereof extended so as to accurately show the progress of the workings, the property lines and outcrop as above provided; and he shall immediately thereafter notify the inspector of his district who shall forward to the said operator, or his engineer the maps held by such inspector to be extended as above required.

Sec. 6. If the operator or agent of any coal mine shall neglect or fail to furnish to the mine inspector of his district any copy of map or extension thereof as provided in preceding section of this act, the mine inspector is hereby authorized to cause a correct survey and map or plan of said coal mine or the extension thereof to be made at the expense of the operator of such mine, the cost of which shall be recoverable from said operator as other debts are recoverable by law, and if at any time the chief of the department of

mines have reason to believe that such map or plan or extension thereof furnished in pursuance of the preceding section, be materially incorrect such as will not serve the purpose for which it was intended, he may have survey and map or plan or the extension thereof made or corrected and the expense of making such survey and map or plan or extension thereof under the direction of said chief of the department of mines, shall be paid by the operator and the same may be collected as other debts are recoverable by law; and if found correct the expense thereof to be paid by the State.

Sec. 7. After the passage of this act, each operator of a coal mine, before making any additional mine openings, shall furnish the district mine inspector of the district in which the mine is located, a plan of the proposed openings and mine development.

Sec. 8. After six months from and after the passage of this act, it shall be the duty of the mine foreman or the assistant mine foreman of every coal mine in this State to see that every person employed to work in such mine shall, before beginning to work therein, be instructed as to the particular danger, incident to his work in such mine, and furnished a copy of the mining law and rules of such mine.

Every inexperienced person so employed shall work under the direction of the mine foreman, his assistant or such other experienced worker as may be designated by the mine foreman or assistant until he is familiar with the danger, incident to his work, and it shall be unlawful for the operator, agent or mine foreman of any coal mine, to employ any person to work in said mine, or permit any persons to be in said mine for the purpose of working therein, unless they are in communication with at least two openings or outlets, separated by natural strata, of not less than one hundred feet in breadth, if the mine be worked by shaft, and of not less than fifty feet in breadth at the outlets, if worked by slope or drift; to each of said outlets there shall be provided from the interior of the mine, a safe and available roadway properly drained, which shall at all times, while the mine is in operation, be kept free from all obstructions that might prevent travel thereon in case of an emergency, and if either of said outlets be by shaft, it shall be fitted with safe and available appliances, such as stairs or hoisting machinery, which shall at all times, when the mine is in operation, be kept in order and ready for immediate use, whereby persons employed in the mine may readily escape in case of an accident.

This section shall not apply to any mine while work is being prosecuted with reasonable diligence in making communication between said outlets, necessary repairs and removing obstructions, so long as not more than twenty persons are employed at any one time in said mine; neither shall it apply to any mine, or part of a mine, in which a second outlet has been rendered unavailable by reason of the final robbing of pillars, preparatory to abandonment; so long as not more than twenty persons are employed therein at any one time.

For violation of this section the operator, agent or mine foreman, shall, upon conviction, be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

Sec. 9. The operator or agent of every coal mine worked by shaft shall forthwith provide, and hereafter maintain, a metal tube from the top to the bottom of such shaft suitably adapted to the free passage of sound through which conversation may be held between persons at the top and at the bottom of the shaft, also the ordinary means of signaling, and an approved safety catch and a sufficient cover overhead on every carriage used for lowering or hoisting persons, and at the top of the shaft an improved safety gate, and an adequate brake on the drum of every machine used to lower or hoist persons in such shaft; and the said operator or agent shall have the machinery used for lowering or hoisting persons into or out of the mine be kept in safe condition and inspected once in each twenty-four hours, by some competent person; and there shall be cut out or around the side of hoisting shaft or driven through the solid strata at the bottom thereof a traveling way of not less than five feet high and three feet wide to enable a person to pass the shaft in going from one side of it to the other without passing over or under the cage or other hoisting apparatus.

Any operator or agent who shall fail or refuse to comply with the requirements of this section shall be guilty of a misdemeanor and upon conviction shall be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than thirty days nor more than one year, in the discretion of the court.

SEC. 10. No operator or agent of any coal mine, worked by shaft or slope, shall place in charge of any engine, used for lowering into or hoisting out of said mine persons employed therein, any but competent and sober engineers; and no engineer in charge of such machinery shall allow any person except such as may be deputed for that purpose by the operator or agent, to interfere with any part of the machinery; and no person shall interfere with or intimidate the engineer in the discharge of his duties; and in no case shall more than ten persons ride on any cage or car at one time, and no person shall ride on a loaded cage or car in any shaft or slope.

All slopes, engine planes or motor roads used by persons in any mine, shall be made of sufficient width to permit persons to pass moving cars with safety, or refuge holes of ample dimensions, and not more than sixty feet apart, shall be made on one side of said slope, engine plane or motor roads; such refuge holes shall be kept free from obstructions, and the roof and side thereof shall be made secure and be kept whitewashed at all times; no person shall travel on foot to or from his work upon any slope, engine plane or motor roads when other good roads are provided for that purpose.

For violation of the foregoing provisions of this section the operator or agent or miner shall, upon conviction, be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

SEC. 11. The operator, agent or mine foreman of every coal mine, whether worked by shaft, slope or drift, shall provide and hereafter maintain for every such mine ample means of ventilation, affording no less than one hundred cubic feet of air per minute for each and every person employed in such mine, and as much more as the district mine inspector may require, which shall be circulated around the main headings and cross headings and working places, to an extent that will dilute, render harmless and carry off the noxious and dangerous gases generated therein; and as the working places shall advance break throughs for air shall be made not to exceed eighty feet apart in pillars, or brattice shall be used, so as to properly ventilate the face, and all the break throughs between the intake and return air ways not required for the passage of air shall be closed with stoppings substantially built with suitable material, which shall be approved by the district mine inspector, so as to keep the working places well ventilated.

After six months from the passage of this act, not more than sixty persons shall be permitted to work in the same air current: *Provided*, That a larger number, not exceeding eighty persons may be allowed by the district mine inspector where, in his judgment, it is impracticable to comply with the foregoing requirement.

No operator, agent or mine foreman shall permit any person to work where they are unable to maintain at least one hundred cubic feet of air per minute, but this shall not be construed to prohibit the operator from employing men to make the place of employment safe and to comply with this requirement: *Provided, further*, That while the repair work necessary to get the mine in condition to comply with the law, no person or persons shall be permitted to enter that part of the mine affected except those actually employed in doing the necessary repair work.

In all mines, accumulation of fine dry coal dust, shall as far as practicable, be prevented and such dust shall be kept properly watered down.

For violation of the foregoing provisions of this section the operator, agent or mine foreman, shall upon conviction, be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

No miner or other employee shall take into any mine in this State any larger quantity of powder or other explosive than he may reasonably expect to use in any one shift, and all powder shall be carried into the mine in metallic canisters of a capacity not to exceed five pounds; any person violating this provision shall upon conviction, be fined five dollars for each offense or imprisoned in the county jail not exceeding ten days.

SEC. 12. In all mines generating fire damp and where there is every reason to believe that gas will be encountered in the future workings and developments of the mine, the minimum ventilation shall be one hundred and fifty cubic feet per minute for each and every person employed therein and as much more as one or more of the district mine inspectors may deem requisite and all stoppings on the main entries shall be substantially built with suitable material,

workings shall be approved by the district mine inspector, so as to keep the workings well ventilated; doors on main haul ways shall be avoided in gaseous workings, and where practicable, and overcasts built of masonry or other incombustible material of ample strength shall be adopted, and where doors are used they shall be built in a substantial manner and hung so as to close automatically when unobstructed.

For violation of the foregoing provisions of this section the operator, agent or mine foreman, shall upon conviction, be fined not less than fifty nor more than five hundred dollars or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

All old unused workings and abandoned parts of the mines must be protected by such safeguards as will prevent the dangerous overflow of any standing gas therein, and all avenues leading thereto shall be so arranged and conducted so as to give cautionary notice to all such workmen in such mines of the danger in entering therein; and in order to secure the safety of the workmen in general against the danger in said abandoned or worked out parts of the mines, notices shall be put up and kept standing, as far as practicable, which shall afford warning to all such workmen not to enter such parts of said mine; and in addition thereto, all persons, other than those specially charged with that duty, are hereby forbidden to enter such abandoned parts of such mines where gas may be found.

It shall be unlawful for any miner, after having exploded in any working place sixty cubical inches or more of powder, in one or more blasts, in any mine known to generate gas in large quantities, to enter such working place and attempt to resume work in any manner whatever with a naked light in less than twenty minutes after the blast has been exploded.

And for violation of these provisions of this act, such person or persons so offending shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than five dollars nor more than one hundred dollars and be confined in the county jail not less than ten days nor more than one year. In all mines where explosive gas, or other gas of a dangerous or poisonous nature, is known to generate in dangerous quantities, the workmen shall be immediately instructed to withdraw from the mine in case of the stoppage of the fan, or heavy falls of the roof which may obstruct the main intake or return air way until such obstruction is removed.

Sec. 13. And it shall be unlawful in all mines where gas is being generated in dangerous quantities to use any other mechanical power for ventilation purposes except fan power, and the fan shall be kept in operation night and day unless written permission be granted by the chief of the department of mines or the district mine inspector in whose district the mine is situated; but no mine operator shall be required to keep such fan going where it is necessary to shut down for the purpose of repairing machinery or doing other work in the mines which may make it necessary.

It shall be the duty of every mine owner or operator in this State whose mine or mines are known to generate fire damp or other dangerous gas or gases, in dangerous quantities to employ a "fire boss" or "bosses" where necessary, who shall be a citizen or citizens of this State, and have such knowledge of fire damp and other dangerous gases as to be able to detect the same with the use of safety lamps and shall have a practical knowledge of the subject of the ventilation of mines and the machinery and appliances used for that purpose, and be a person with at least three years' experience in mines generating gases; it shall be the duty of said fire boss or bosses where employed in said gaseous mines to prepare a danger signal with suitable color at the mine entrance, and no person except the mine owner, operator or agent, and only then in case of necessity, shall pass beyond this danger signal until the mine has been examined by the fire boss, and the same or certain parts thereof reported by him to be safe; it shall further be the duty of said fire boss or bosses to go into all the working places of such mine or mines where gas is known to exist, or liable to exist in dangerous quantities, and carefully examine the same with a safety lamp, and do, or cause to be done, whatever may be necessary to remove from such working place or places, all dangerous gases and make the same safe for persons to enter therein as workmen in such mine or mines; such examination and removal of said gases shall begin within three hours before the time each shift commences work and it shall be the duty of the said fire boss at each examination to leave evidence of his presence at the face of every working place examined, and if the mine is safe he shall remove the danger signal, or change the color thereof to safety, in order that the

employees may enter said mine and begin work; in the performance of duties on the part of the fire boss or bosses they shall have no superior office, but all the employees working inside of said mine or mines shall be subordinate to said fire boss or bosses in this particular work; the fire boss shall, after having completed the examination of the mine before each shift, make a written record of the condition of the mine within a book having a form prescribed by the chief of the department of mines, which record shall at all times be kept at the mine subject to the inspection of the district mine inspector or chief of the department of mines; it shall be unlawful for any person to enter said mine or mines for any purpose at the beginning of work upon each shift therein until such signal or warning has been given by said fire boss or bosses on the outside of said mine or mines as to the safety thereof, as herein provided, except under the direction of said fire boss or bosses, and then for the purpose of assisting in making said mine safe; and each person who shall enter such mine except as aforesaid before such notice or signal has been given, or any operator, agent or fire boss who shall violate the provisions of this section, shall be guilty of a misdemeanor and upon conviction thereof shall be fined not less than fifty dollars nor more than five hundred dollars, or imprisoned in the county jail not less than sixty days nor more than one year.

Sec. 14. Mines in which explosive gas is generated in dangerous quantities from the coal or adjacent strata shall be worked exclusively by the use of locked safety lamps, and no open lamp nor torch shall be used except as may be permitted in writing by the district mine inspector; the safety lamps used for examining any mine or which may be used for working therein shall be furnished by, and be the property of the operator of the mine, and shall be in the charge of some person to be designated by the "fire boss" and at least two safety lamps shall be kept at every coal mine whether such mine generates fire damp or not.

Any operator, agent or other person who shall fail or refuse to comply with the requirements of this section shall be guilty of a misdemeanor and upon conviction shall be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than thirty days nor more than one year, in the discretion of the court.

Sec. 15. In order to better secure the proper ventilation of every coal mine and promote the health and safety of persons employed therein, the operator or agent shall employ a competent and practical inside overseer, to be called mine foreman, who shall be a citizen of this State, and an experienced coal miner, or any person having five years' experience in a coal mine, who shall keep a careful watch over the ventilating apparatus and the air ways, traveling ways, pumps and drainage; and shall see that as the miners advance their excavations, proper break throughs are made, to properly ventilate the mine, and that all loose coal, slate and rock overhead in the working places and along the haul ways be removed or carefully secured so as to prevent danger to persons employed in such mines; and that sufficient props, caps and timbers, as nearly as possible of suitable dimensions, are furnished for the places where they are to be used, and such props, caps and timbers shall be delivered and placed at such points as the rules for the government of each respective mine provide for them to be delivered; and every workman in want of props, cap pieces and timbers shall notify the mine foreman, or such other person who may be designated for that purpose, at least one day in advance giving the length and number of props or timbers and cap pieces he requires; but in case of an emergency the timbers may be ordered immediately upon the discovery of any danger; and it shall be the duty of each miner to properly prop and secure his place in order to make the same secure for him to work therein. The said mine foreman shall have all water drained and hauled out of the working places where the same is practicable, before the miners enter and said working places kept dry as far as practicable while the miners are at work; it shall be the duty of the mine foreman to see that the crosscuts are made as required by law and that the ventilation shall be conducted through said crosscuts into the rooms by means of check doors placed on the entries or other suitable places, and he shall not permit any room to be opened in advance of the ventilation current. Should the mine inspector discover any room, entry, air way or other working places being driven in advance of the air current contrary to the requirements of this act he shall order the workmen working such places to cease at once until the law is complied with.

And the mine foreman shall measure the air current at least twice each month at the inlet and outlet and at or near the faces of the advanced headings

and shall keep a record of such measurements in a book having a form prescribed by the chief of the department of mines. An anemometer shall be provided for this purpose by the operator of the mine.

And in mines in which the operations are so extensive that all the duties devolving upon the mine foreman can not be discharged by one man, competent persons having had three years' experience in a coal mine may be designated and appointed as assistants, who shall act under the mine foreman's instructions, and shall be responsible for their conduct in the discharge of their duties under such designation or employment.

On all haul ways space not less than ten feet long and two feet six inches wide, between the wagon and the rib, shall be kept open at distances not exceeding one hundred feet apart, in which shelter from passing wagons may be had; it shall further be the duty of the mine foreman to have bore holes kept not less than twelve feet in advance of the face, and, where necessary, on sides of the working places that are being driven toward and in dangerous proximity to an abandoned mine or part of mine suspected of containing inflammable gases or which is filled with water; on all haul ways where hauling is done by machinery of any kind, the mine foreman shall provide a proper system of signals and a conspicuous light, and also for the carrying of a conspicuous light on the front and rear of every trip or train of cars when in motion in a mine, and when hoisting or lowering of men occurs before daylight in the morning or at evening after darkness, at any mine operated by shaft, the said mine foreman shall provide and maintain at the shaft mouth a light of stationary character sufficient to show the landing and all surrounding objects distinctly, and sufficient light of a stationary character shall be located at the bottom of the shaft so that persons coming to the bottom may clearly discern the cages and other objects closely contiguous thereto; no cages on which men are riding shall be lifted or lowered at a rate of speed greater than six hundred feet per minute; no mine cars either empty or loaded, shall be hoisted while men are being lowered or hoisted, and no cage having an unstable self-dumping platform shall be used for the carrying of workmen unless the same is provided with some device by which the same may be securely locked when men are being hoisted or lowered into the mine.

At every mine where ten men are employed under ground it shall be the duty of the operator thereof to keep always on hand at the mine a properly constructed stretcher, a woolen and a water-proof blanket, and all necessary requisites which may be advised by medical practitioner employed by the company, and if as many as one hundred and fifty men [be] employed, two stretchers with the necessary equipments as above advised; the mine foreman, or his assistant, shall visit and examine every working place in the mine every alternate day while the miners of such places are at work and shall direct that each and every working place shall be secured by props or timbers whenever necessary, which shall be placed and used by the miners working therein as in this act provided, to the end that such working places shall be made safe, and the said mine foreman shall not permit nor shall anyone work in a place known to be unsafe unless it be for the purpose of making it safe. The mine foreman shall notify the operator or agent of the mine of his inability to comply with any of the requirements of this section, and it then shall become the duty of any operator or agent to at once attend to the matter complained of by the mine foreman, so as to enable him to comply with the provisions hereof if the same can be practically done. Any operator or agent of any coal mine, or other person who shall neglect to comply with the requirements of this section shall, upon conviction, be guilty of a misdemeanor and shall be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than ten days nor more than ninety days at the discretion of the court. Any mine foreman or employee failing to comply with this section shall, upon conviction, be fined not less than five dollars, nor more than fifty dollars, or imprisoned in the county jail not less than ten days nor more than ninety days, in the discretion of the court.

SEC. 16. The operator or agent of every coal mine shall furnish the inspector proper facilities for entering such mine and making examinations or obtaining information; and if any inspector shall discover that any mine does not, in appliances for the safety of the persons employed therein, conform to the provisions of this act, or that by reason of any defect or practice in or at such mine the lives or health of persons employed therein, are endangered, he shall immediately, in writing, notify such operator or agent thereof, stating in

such notice the particulars in which he considers such mine to be defective or dangerous and if he deem it necessary for the protection of the lives or health of the persons employed in such mine, he shall, after giving notice of one day to the said operator or agent, in writing notify immediately the chief of the department of mines, who shall immediately examine the mine reported to be unsafe, and if upon such examination the mine reported to be unsafe is in fact found to be in an unsafe condition, the chief of the department of mines shall forthwith order the mine to be closed until it is placed in a safe and proper condition for mining operations; the owner or operator of any mine so closed may apply to the circuit court wherein such mine is located, or the judge thereof in vacation, by petition for an order directing said mine to be reopened, and such court or the judge thereof in vacation shall immediately hear and determine the matters arising upon such petition, and if upon full hearing thereof the court or the judge thereof in vacation shall find that said mine is in a reasonably safe condition, the prayer of said petition shall be granted; but notice of said hearing shall be given to the district mine inspector or the chief of the department of mines three days at the least before said hearing; and in all such hearings the attorney-general shall appear for the State and defend the same.

SEC. 17. No boy under fourteen years of age, nor female person of any age shall be permitted to work in any coal mine, and in all cases of doubt, the parents or guardians of such boys shall furnish affidavits of their ages; any operator, agent or mine foreman who shall knowingly violate the provisions of this section or any person knowingly making a false statement as to the age of any boy under fourteen years of age, applying for work in any coal mine shall, upon conviction, be fined not less than ten nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

SEC. 18. No miner, workman or other person, shall knowingly injure any shaft, lamp, instrument, air course, or brattice, or obstruct or throw open air ways or carry matches or open lights in the places worked by safety lamps or disturb any part of the machinery or appliances, open a door used for directing ventilation and not close it again, or enter any part of a mine against caution, or disobey any order given in carrying out any of the provisions of this act, or do any other act whereby the life or health of any person employed in the mine or the security of the mine is endangered; any person who shall violate the provisions of this section shall, upon conviction, be fined not less than ten nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court; when any operator of a mine shall in any manner refuse to furnish all supplies necessary for the mine foreman to comply with the requirements of this act after being so requested so to do and by reason of such refusal, loss of life or injury may result to any employee, a right of action for damages may ensue against the operator of the mine wherein such employee has not contributed to his own injury or loss.

SEC. 19. Nor shall any person or persons, or combination of persons, by force, threats, menaces, or intimidation of any kind, prevent or attempt to prevent from working in or about any mine, any person or persons who have the lawful right to work in or about the same, and who desires so to work; but this provision shall not be construed as to prevent any two or more persons from associating together under the name of Knights of Labor, or any other name they may desire, for any lawful purpose, or for using moral suasion or lawful argument to induce anyone not to work in and about any mine; any person or persons who shall violate the provisions of this section shall, upon conviction, be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than ten days nor more than ninety days, in the discretion of the court.

SEC. 20. Whenever by reason of any explosion or other accident in any coal mine, or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the superintendent of the colliery, and in his absence, the mine foreman in charge of the mine, to give notice forthwith, by mail or otherwise, to the inspector of the district, stating the particulars of such accident; and if anyone is killed thereby, to the coroner of the county also, or in his absence or inability to act, to any justice of the peace; and the said inspector shall, if he deem it necessary from the facts reported, immediately go to the scene of such accident and make such suggestion and render such assistance as he may deem necessary for the future safety of the

men and investigate the cause of such explosion or accident, and make a record thereof, which he shall preserve with the other records of his office; and to enable him to make such investigation, he shall have the power to compel the attendance of witnesses, and to administer oaths or affirmations; and the costs of such investigation shall be paid by the county in which such accident occurred, in the same manner as the costs of the coroner's inquests are now paid; if the coroner or justice shall determine to hold an inquest upon the body of any person killed, as aforesaid, he shall impanel a jury, no one of whom shall be directly or indirectly interested, and the inspector of mines, or the chief of the department of mines, if present at such inquest, shall have the right to appear and testify and to offer any testimony that may be relevant and to question and cross-question any witness; and the coroner or justice shall deliver to the inspector a copy of the testimony and verdict of the jury; any operator, agent, superintendent or mine foreman who shall fail to perform the duty provided in this section shall, upon conviction, be guilty of a misdemeanor, and shall be fined not less than ten nor more than five hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days, in the discretion of the court.

Sec. 21. The operator or agent of every coal mine shall annually, during the month of July, mail or deliver to the chief of the department of mines, a report for the preceding twelve months, ending with the thirtieth day of June; such report shall state the names of the operators and officers of the mine, the quantity of coal mined and such other information, not of a private nature, as may from time to time be required by the chief of the department of mines; blank forms of such reports shall be furnished by the chief of the department of mines. At any time any person, company or corporation operating a coal mine shall transfer the ownership of any mine to another person, company or corporation, the person, company or corporation transferring such ownership shall within thirty days make a report to the chief of the department of mines of such change, and a statement of the tons of coal produced since the first of July, last, previous to the date of such sale or transfer of such mine or mines; any operator or agent failing to furnish the reports as required in this section shall be guilty of a misdemeanor and upon conviction, shall be fined not less than fifty nor more than five hundred dollars, or imprisoned in the county jail not less than thirty nor more than ninety days, in the discretion of the court.

Sec. 22. Any operator, agent, superintendent or mine foreman having in charge any mine, who shall knowingly permit any person to work in any part of a mine in violation of instructions issued by the mine inspector, made in compliance with the requirements of this act, shall upon conviction be fined not less than fifty nor more than one hundred dollars for each person permitted to work in violation of such instructions, and any employee who shall work in violation of such instructions shall, upon conviction, be fined not less than ten nor more than fifty dollars.

Sec. 23. In any mine in which solid shooting is done the district mine inspector is authorized to prescribe the conditions under which such solid shooting may be done.

Sec. 24. No steam locomotive shall be used in mines where men are actually employed in the extraction of coal, except by the consent of the district mine inspector, but this shall not be construed to prohibit any mine owner from operating a steam locomotive through any tunnel, haul way or part of a mine that is not in actual operation and furnishing coal; any operator or agent who violates this section shall be guilty of a misdemeanor and upon conviction shall be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than thirty nor more than ninety days, in the discretion of the court.

Sec. 25. There shall be adopted by the operator of every mine in this State special rules for the government and operation of his mine or mines, covering all the work pertaining thereto in and outside of the same, which however, shall not be in conflict with the provisions of the mining laws of this State; such rules when established shall be printed on card board, in the language spoken by ten or more employees, and shall be posted up in the drum house, tippie or some other conspicuous place about the mines where the same may be seen and observed by all the employees at such mines, and when said rules are so posted the same shall operate as a notice to all employees at such mine of their acceptance of the contents thereof; and it shall be the duty of each mine operator to furnish a printed copy of said rules to each of his employees when requested by either or any of them; any operator or agent who violates

the provisions of this section shall be guilty of a misdemeanor and upon conviction shall be fined not less than fifty nor more than five hundred dollars, or be imprisoned in the county jail not less than thirty nor more than ninety days, in the discretion of the court.

SEC. 26. In all prosecutions under this act the circuit court, criminal court and justices of peace have concurrent jurisdiction with the right of appeal to circuit court.

SEC. 27. The provisions of this act shall apply only to coal mines in which five or more persons are employed in a period of twenty-four hours; but no mine employing less than ten men shall be required to employ a mine foreman.

Approved by the governor February 27, 1907.

CHAPTER 82.—*Employment offices.*

SECTION 1. Sections * * * two, * * * one hundred and nine, * * * of chapter thirty-two of the Code of West Virginia * * * [shall] be amended and reenacted * * * so as to read as follows:

Section 2. No person without a state license therefor shall
(z) carry on the business of a labor agency:

Provided, That nothing in this chapter contained, and no license or payment under the provisions hereof, shall be taken to legalize any act which otherwise may be in violation of law, or exempt any person from any penalty prescribed for such violation.

Sec. 100. * * * on every license to conduct the business of a labor agency, one hundred dollars; any person or corporation who hires or contracts with laborers, male or female, to be employed by persons other than himself and to be transported out of the State for employment in another State, shall be deemed a labor agency within the meaning of this clause.

Approved by the governor February 27, 1907.

WISCONSIN.

ACTS OF 1907.(*)

Bureau of labor and industrial statistics.

[For section 1021h see Bulletin No. 73, p. 076.]

SECTION 1021t. The commissioner of labor and industrial statistics is authorized to employ, for his office, such extra assistants as he may from time to time deem necessary and fix their compensation: *Provided*, That the compensation so fixed by said commissioner of labor and industrial statistics, shall not exceed the amount fixed by law for similar services: *And provided further*, That the total amount expended for such extra assistants shall be paid out of moneys in the general fund not otherwise appropriated, and shall not in any one year, exceed two thousand five hundred dollars.

Approved July 9, 1907.

Accidents to be reported.

SECTION 1022-53. It shall be the duty of all physicians and surgeons practicing in this State to report within thirty days to the local registrar of vital statistics of the district, any accident to any person whom they are called upon to care for professionally when such person is thereby incapacitated from pursuing his usual vocation for a period of two weeks or more, using such form of certificate as may be provided by the state bureau of vital statistics.

Approved July 1, 1907.

* All statutes amended or enacted in 1907 were arranged and numbered as of the Compiled Statutes of the State, in accordance with Joint Resolution No. 119, 1907. Amended sections are indicated below by the word "amended," in parenthesis, following the section number; other sections are new legislation.

Examination and licensing of barbers.

SECTION 1636-24 (amended). Any person desiring to obtain a certificate of registration under this act, shall make application to such board therefor, pay to the treasurer of said board an examination fee of one dollar, present himself at the next regular meeting of the board for the examination of applicants, and if he shows that he has studied and practiced the trade for two years as an apprentice under one or more practicing barbers, or for at least two years in a properly appointed and conducted barber school, under the instruction of a competent barber, or practiced the trade for at least two years in this State or other States, and that he is possessed of the requisite skill in such trade to properly perform all the duties thereof, including his ability in the preparation of the tools, shaving, hair cutting and all the duties and services incident thereto, and has sufficient knowledge concerning the common diseases of the face and skin to avoid the aggravations and spreading thereof in the practice of said trade, his name shall be entered by the board in the register hereafter provided for, and a certificate of registration shall be issued by him authorizing him to practice said trade in this State. All persons making application for examination under the provisions of this act, shall be allowed to practice the occupation of barbering until the next meeting of the board, and the board shall issue him a permit authorizing him to practice the said trade until the next meeting of the board.

Sec. 1636-25 (amended). 1. Nothing in this act shall prohibit any person from serving as an apprentice in said trade under a barber authorized to practice the same under this act, or from serving as a student in any barber school for the training of students in such trade under the training of a qualified barber.

2. Such apprentice or student shall apply to said board to have his name registered with said board in a book which shall be kept by the board for the registering of apprentices or students, and secure a permit to practice as an apprentice or student under the instructions of a qualified barber. After having practiced the trade for two years under a qualified barber such apprentice or student shall be eligible to become a registered barber and present himself at the next regular meeting of the board held nearest to him for the examination of applicants, and pay the fee of one dollar for examination as provided for in section 1636-24, Statutes of 1898.

Sec. 1636-28 (amended). Said board shall be authorized to adopt reasonable rules providing for the sanitary regulation of barber shops, subject to the approval of the state board of health, and shall have the power to enter any barber shop during business hours for the purpose of inspection of such shops. If any shop be found in an unsanitary condition, or if any barber working therein has been charged with imparting any contagious diseases, the board shall immediately notify the local health officer thereof, and such shop shall be quarantined, and the barber so charged shall not practice his occupation until such quarantine shall be removed by the health officer. Said board shall have the power to revoke any certificate of registration granted by it under this act, for conviction of crime, habitual drunkenness for six months immediately before a charge duly made, gross incompetency, failure to comply with the sanitary rules approved by the state board of health, or for having imparted any contagious or infectious diseases: *Provided*, That before any certificate shall be so revoked, the holder thereof shall have notice in writing of the charge or charges against him, and a day specified in said notice, at least five days after the service thereof, be given a public hearing and be given an opportunity to present testimony in his behalf and to confront the witness against him. Any person whose certificate has been revoked, may after the expiration of ninety days, apply to have his certificate re-granted, and the same shall be re-granted to him upon his giving satisfactory proof that the disqualification has ceased to exist.

SEC. 1636-30 (amended). Any person practicing the occupation of barber in this State, without having obtained a certificate of registration, as provided by this act, or willfully employ[ing] a barber who has not such a certificate, or falsely pretending to be qualified to practice such occupation under this act, or violating any of the provisions of this act, is guilty of a misdemeanor and upon conviction thereof, shall be punished by a fine of not less than ten dollars nor more than one hundred dollars, or by imprisonment in the county jail not less than ten days or more than ninety days.

Approved April 23, 1907.

Inspection of factories—Blowers for emery wheels.

[See Bulletin No. 73, pp. 979, 980.]

Regulation and inspection of bakeries.

[See Bulletin No. 73, pp. 980 to 982.]

Employment of children—Paid musicians.

[See Bulletin No. 73, pp. 810, 811.]

Employment of children—General provisions.

[See Bulletin No. 73, pp. 811 to 813.]

Height of wires above railroad tracks.

SECTION 1778a—1. It shall be unlawful for any person, firm or corporation to string any wire, electric or other, over the tracks of any steam railroad company except in accordance with the provisions of this section. All such wires shall be suspended over a double cross arm attached to a pole at each side of the crossing. The poles shall not be less than six inches in diameter at the top, set not less than five feet in the ground, securely guyed, and, unless the railroad right of way is not of greater width, shall be set not more than one hundred feet apart at such crossings. All such wires shall be tied to insulators on pins set in the cross arms. The cross arms shall be attached to the poles by machine bolts and braced by at least one iron brace from each cross arm to the pole. All such wires shall be maintained not less than twenty-five feet above the surface of the rails at such crossing except the street railway trolley wires shall be maintained not less than twenty-two feet above the surface of the rails at such crossings.

Sec. 1778a—2. The railroad commission of Wisconsin is hereby vested with authority to enforce the provisions of this act, and any person, firm or corporation ordered by the commission to change its wires so as to comply with this act failing to comply with such order within ten days from the service thereof shall be liable for a penalty or forfeiture of twenty-five dollars, and to a like penalty or forfeiture for every ten days during which it shall fail to comply with the order of the commission, unless a greater length of time to make such change shall be specified by the commission in said order, or upon cause shown.

* * *

Approved June 20, 1907.

Accidents on railroads.

SECTION 1797m—101. 1. Every public utility shall, whenever an accident attended with loss of human life occurs within this State upon its premises or directly or indirectly arising from or connected with its maintenance or operation, give immediate notice thereof to the commission.

2. In the event of any such accident the commission, if it deem the public interest require it, shall cause an investigation to be made forthwith, which investigation shall be held in the locality of the accident, unless for greater convenience of those concerned it shall order such investigation to be held at some other place; and said investigation may be adjourned from place to place as may be found necessary and convenient. The commission shall seasonably notify the public utility of the time and place of the investigation.

Approved July 9, 1907.

Age and qualifications of telegraph operators on railroads.

SECTION 1800j. 1. It shall be unlawful for any common carrier by railroad, carrying freight or passengers between points within this State, to employ any telegraph operator, except an assistant under an experienced operator, who shall not have attained the age of eighteen years and who shall not have had actual experience as a telegraph operator, or who shall not have had at least six months' actual experience under the tutorship of an experienced railroad telegraph operator, or who shall not have been graduated from a school of telegraphy having at least a six months' course.

2. Any common carrier by railroad or any of its officers or agents who shall violate the provisions of this act shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars nor more than one thousand dollars for each offense.

Approved July 9, 1907.

Hours of labor of employees on railroads.

SECTION 1809l. It shall be unlawful for any common carrier, its officers or agents, to require or permit: (1) Any employee to be or remain on duty for a longer period than sixteen consecutive hours, and whenever any such employee of such common carrier shall have been continuously on duty for sixteen hours he shall be relieved and not required or permitted again to go on duty until he has had at least ten consecutive hours off duty; and no such employee who has been on duty sixteen hours in the aggregate in any twenty-four hour period shall be required or permitted to continue or again go on duty without having had at least eight consecutive hours off duty.

SEC. 1809m. The provisions of this act shall not apply in any case of casualty or unavoidable accident or the act of God; nor where the delay was the result of a cause not known to the carrier or its officers or agents in charge of such employee at the time said employee left the terminal and which could not have been foreseen nor to the crews of wrecking or relief trains.

SEC. 1809n. The railroad commission shall fully investigate all cases of violation of this act and shall lodge with the proper district attorneys information of such violations as may come to its knowledge. The commission shall have the power to employ such inspectors or other persons as may be necessary to enforce the provisions of this act. To enforce the provisions of this act the railroad commission and its agents or employees shall have the power to administer oaths, interrogate witnesses, take testimony, and require the production of books and papers.

SEC. 1809o. Any common carrier or any of its officers or agents violating any of the provisions of section 1809l is declared to be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than one hundred dollars nor more than one thousand dollars.

Approved July 16, 1907.

Railroad trains—Sufficient crews.

SECTION 1809r. It shall be unlawful for any railroad company doing business in the State of Wisconsin to run over its road, or part of its road, outside of the yard limits, any passenger train with three cars or less, with less than a full passenger crew, consisting of one engineer, one fireman, one conductor and one brakeman; for more than three cars, two brakemen; and on trains of more than three cars the said brakeman [brakemen] shall not be required to perform the duties of the baggage master or express agent while on the road. Nothing in this section shall apply to trains picking up a car or cars between terminals in this State, or to trains propelled by electricity.

SEC. 1809s. It shall be unlawful for any railroad company in the State of Wisconsin to run over its road, or any part thereof, outside of yard limits, any freight train of three cars or more with less than a full train crew consisting of five persons: one engineer, one fireman, one conductor, and two brakemen.

SEC. 1809t. Any superintendent or train master or their assistants or any other officer, or employee of any railroad company doing business in the State of Wisconsin, operating more than twenty-five miles of road who shall send out on the road, or cause to be sent out on the road, outside of yard limits, any passenger train or any freight train whose crew consists of less than the number required in sections 1809r and 1809s of this act, shall be guilty of a misdemeanor, and upon conviction shall be fined not less than fifty dollars for each offense.

SEC. 1809u. The circuit courts of the several counties of this State shall have jurisdiction of offenses under this act.

Approved June 25, 1907.

Liability of railroad companies for injuries to employees.

SECTION 1816 (amended). Every railroad company shall be liable for damages for all injuries whether resulting in death or not, sustained by any of its employees, subject to the provisions hereinafter contained regarding contributory negligence on the part of the injured employee:

1. When such injury is caused by a defect in any locomotive, engine, car, rail, track, roadbed, machinery or appliance used by its employees in and about the business of their employment.

2. When such injury shall have been sustained by any officer, agent, servant or employee of such company, while engaged in the line of his duty as such and which such injury shall have been caused in whole or in greater part by the negligence of any other officer, agent, servant or employee of such company, in the discharge of, or by reason of failure to discharge his duties as such.

3. In every action to recover for such injury the court shall submit to the jury the following questions: First, whether the company, or any officer, agent, servant or employee other than the person injured was guilty of negligence directly contributing to the injury; second, if that question is answered in the affirmative, whether the person injured was guilty of any negligence which directly contributed to the injury; third, if that question is answered in the affirmative, whether the negligence of the party so injured was slighter or greater as a contributing cause to the injury than that of the company, or any officer, agent, servant or employee other than the person so injured; and such other questions as may be necessary.

4. In all cases where the jury shall find that the negligence of the company, or any officer, agent or employee of such company was greater than the negligence of the employee so injured, and contributing in a greater degree to such injury, then the plaintiff shall be entitled to recover, and the negligence, if any, of the employee so injured shall be no bar to such recovery.

5. In all cases under this act the question of negligence and contributory negligence shall be for the jury.

6. No contract or receipt between any employee and a railroad company, no rule or regulation promulgated or adopted by such company, and no contract, rule or regulation in regard to any notice to be given by such employee shall exempt such corporation from the full liability imposed by this act.

7. The phrase "railroad company," as used in this act, shall be taken to embrace any company, association, corporation or person managing, maintaining, operating, or in possession of a railroad in whole or in part within this State whether as owner, contractor, lessee, mortgagee, trustee, assignee or receiver.

8. In any action brought in the courts in this State by a resident thereof, or the representative of a deceased resident, to recover damages in accordance with this act, where the employee of any railroad company owning or operating a railroad extending into or through this State and into or through any other State or States shall have received his injuries in any other State where such railroad is owned or operated, and the contract of employment shall have been made in this State, it shall not be competent for such railroad company to plead or prove the decisions or statutes of the State where such person shall have been injured as a defense to the action brought in this State.

9. The provisions of this act shall not apply to employees working in shops or offices.

Approved June 19, 1907.

Hours of labor of train dispatchers.

SECTION 1816m. It shall be unlawful for any corporation or a receiver operating a line of railroad, in whole or in part, in the State of Wisconsin, or any officer, agent or representative of such corporation or receiver, to require or permit any operator to remain on duty for more than one period of eight consecutive hours, and when said operator shall have been on duty for said eight hours he shall be relieved and not required or permitted again to go on duty until he has had at least sixteen consecutive hours off duty in any twenty-four hours: *Provided*, This provision shall not apply in case of casualty upon such railroad; in which case said operator may be required or permitted to be on duty not more than one period of twelve consecutive hours in any twenty-four hours, or not to exceed three days of said twelve successive hours each at one time.

2. The term "operator" shall include train dispatchers, and shall be defined and construed to mean an employee who, by the use of the telegraph or telephone dispatches, or reports, transmits, receives or delivers orders pertaining to or affecting the movement of cars, engines, or trains, or who handles such cars, engines, or trains by or under what is known and termed the block sys-

tem; the term "block system" shall be defined and construed to mean reporting cars, engines, or trains to another office or offices and to the train dispatcher registering the same and operating one or more order or signal devices, and manipulating signal devices affecting the movement of cars, engines, or trains from stations or towers in railroad yards or on main tracks.

3. Whenever the railroad commission shall learn of any violation of this section by any company or by an officer or agent of any such company, it shall be the duty of the railroad commission to investigate such violation at once and it shall have power to require such company to immediately provide such additional employees as are necessary to comply with the provisions of this act.

4. The failure to comply with any of the provisions of this section shall subject the corporation or receiver or any officer, agent or representative of such corporation or receiver to a penalty of not less than one thousand dollars nor more than five thousand dollars for each offense, to be sued for and recovered in the name of the State, with the costs of prosecution, by the attorney-general or under his direction, or by the district attorney for any county in which the violation may occur, and in the circuit court for such county, and such penalty, when recovered, shall be paid into the county treasury of the county in which the violation occurred, for the benefit of such county.

Approved July 11, 1907.

Railroads—Penalties and liabilities.

SECTION 1810 (amended). 1. If any railroad corporation, its officers, agents or servants, violate or fail to comply with any provisions of sections 1798 to 1817 inclusive, such corporation shall for every violation or failure, forfeit not less than ten nor more than one thousand dollars, and be liable to the person injured for all damages sustained thereby.

2. All forfeitures recovered shall inure to the State

Approved July 13, 1907.

Protection of workmen as members of the national guard.

SECTION 4423m. A person who, either by himself or with another, willfully deprives a member of the national guard of his employment, or prevents his being employed by himself or another, or in respect to his trade, business or employment, because said member of said national guard is such member, or dissuades any person from enlistment in the said national guard by threat of injury to him in case he shall so enlist, in respect to his employment, trade, or business, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than ten dollars nor more than twenty-five dollars, or by imprisonment in the county jail for not less than ten days nor more than twenty days.

SEC. 4423n. No association or corporation, constituted or organized for the purpose of promoting the success of the trade, employment, or business of the members thereof, shall by any constitution, rule, by-law, resolution, vote or regulation, discriminate against any member of the National Guard of the State of Wisconsin, because of such membership in respect to the eligibility of such member of the said national guard to membership in such association or corporation, or in respect to his right to retain said last mentioned membership. It is the purpose of this section and the section immediately preceding to protect a member of the said national guard from disadvantage in his means of livelihood and liberty therein but not to give him any preference or advantage on account of his membership in said national guard. A person who aids in enforcing any such provisions against a member of the said national guard with the intent to discriminate against him because of such membership, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than ten dollars nor more than twenty dollars, or by imprisonment in the county jail for not less than ten days nor more than twenty days.

Approved July 1, 1907.

CUMULATIVE INDEX OF LABOR LAWS AND DECISIONS RELATING THERETO.

[This index covers the Tenth Special Report of the Commissioner of Labor, which is a compilation of the labor laws, both Federal and State, in force at the close of the year 1903; it also covers labor laws subsequently enacted and published in Bulletins Nos. 57 to 79 of this office, as well as the compilations published in Bulletin No. 73. Many of the laws contained in the Tenth Special Report are followed by brief notes on the decisions of courts relating to them. Similar decisions reproduced in the Bulletin since the publication of the Tenth Special Report are indexed under the appropriate headings, and are indicated by the letter "D" in parenthesis following the name of the State. Opinions of the Attorney-General on the construction, etc., of labor laws are similarly indexed, and are indicated by the abbreviation "Op." in parenthesis.]

	Tenth special.				Tenth special.		
	Page.	No.	Page.		Page.	No.	Page.
A.				Accidents in mines—Concluded.	992, 1031		
Abandonment of employment. (<i>See</i> Contracts of employment.)				Pennsylvania.....	1002, 1019		
Abandonment of locomotives, etc.:					1020, 1022		
Connecticut.....	196				1025, 1026		
Delaware.....	216, 217			South Dakota.....	1054, 1055		
Illinois.....	290, 291			Tennessee.....	1115		
Kansas.....	387				1130-1132		
Maine.....	458			Utah.....	1151		
New Jersey.....	782			Washington.....	1186, 1190		
Pennsylvania.....	971			West Virginia.....	1218, 1220		
(<i>See also</i> Strikes of railroad employees.)					1250-1252	79	996, 997
Abandonment of steamboats:				Wyoming.....	1309-1311		
Louisiana.....	437			United States.....	1319		
Absence, leave of. (<i>See</i> Leave of absence.)				(<i>See also</i> Mine regulations.)	1383	77	414
Accident insurance. (<i>See</i> Insurance, accident.)				Accidents on railroads:			
Accidents in factories:				Alabama.....	106	73	1043
Indiana.....	346	73	838	Colorado.....		73	1049
Massachusetts.....	515	73	867-872	Connecticut.....	200		
Michigan.....		73	882	Indiana.....		74	274, 275
Minnesota.....	592	73	885	Iowa.....		74	276
Missouri.....	647	73	890	Massachusetts.....	530, 532	70	771
New Jersey.....	761	73	906	Michigan.....	544		
New York.....	815	73	917	Minnesota.....		63	581
Ohio.....	891, 892	73	930			76	1023
Pennsylvania.....	974, 1044	73	946, 956, 957	Mississippi.....	631		
Rhode Island.....	1084, 1085	73	959	Montana.....		72	647
Tennessee.....	1132			Nevada.....		76	1032
(<i>See also</i> Inspection of factories, etc.)				New Jersey.....		77	399
Accidents in mines:				New York.....	837	77	406
Alabama.....	101, 104			North Dakota.....		77	411
Arkansas.....	122			Ohio.....		70	779
Colorado.....	181, 194			Oregon.....		78	621
Idaho.....	261, 262			Pennsylvania.....	1102, 1103	65	360
Illinois.....	311, 312			South Carolina.....	1197	71	397
Indiana.....	355, 356			Vermont.....		79	985
Iowa.....	374			Washington.....		79	1000
Kansas.....	397			Wisconsin.....			
Maryland.....	479			United States.....	1371		
Missouri.....	658			Accidents to employees:			
Montana.....	686			Illinois.....		74	262
New Jersey.....	761			Philippine Islands.....		71	394
New York.....	819, 820			Wisconsin.....		79	998
North Carolina.....	856, 857			United States.....		77	415, 416
Ohio.....	879, 882	59	379	Actions for injuries. (<i>See</i> Injuries.)			
	883			Actions for wages. (<i>See</i> Suits for wages.)			
				Advances made by employers. (<i>See</i> Employers' advances, etc.)			
				Age not ground for discharge:			
				Colorado.....	190, 191		

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Age of employment of children. (<i>See</i> Children, employment of, age limit for.)				Arbitration of labor disputes:			
Age of employment of telegraph operators on railroads. (<i>See</i> Telegraph operators, etc.)				California.....	144, 145		
Agents, emigrant. (<i>See</i> Emigrant agents.)				Colorado.....	177-180	73	10-26
Aid societies. (<i>See</i> Benefit societies.)				Connecticut.....	209, 210		
Alabama, 1907.....		73	1043	Idaho.....	259		
Alien contract labor:				Illinois.....	266-270		
Delaware.....		76	1021	Indiana.....	282-284		
Hawaii.....	252, 253			Iowa.....	334-337		
Indiana.....	342			Kansas.....	384-386		
Virginia.....	1200			Louisiana.....	432-434		
Wyoming.....	1304			Maryland.....	460, 461	57	707, 708
United States.....	1324-1326			Massachusetts.....	511, 513	57	708-710
United States (D.).....	1388-1392	71	397-399	Michigan.....	539-541		
United States (Op.).....		68	183-185	Minnesota.....	607-610		
(<i>See also</i> Coalle labor.)		68	173-176	Missouri.....	671-673		
Allen laborers, protection of:				Montana.....	689-691		
Connecticut.....	204			Nevada.....		76	1033-1035
Wyoming.....	1304			New Jersey.....	745-748		
Allens, employers of, to deduct taxes from wages:				New York.....	802	77	406, 407
Pennsylvania.....	1068			Ohio.....	821-823		
Allens, employment of, on public works:				Oklahoma.....	916-919	77	412
California.....	129, 151			Pennsylvania.....	956-962		
Hawaii.....	257, 258			Texas.....	1156-1159		
Idaho.....	258, 270			Utah.....	1183-1185		
Massachusetts.....	515			Washington.....	1240		
Nevada.....	729			Wisconsin.....	1209-1271		
New Jersey.....	780, 781			Wyoming.....	1301		
New York.....	805, 806			United States.....	1373-1377		
Pennsylvania.....	1060			United States (D.).....		74	206-212
Wyoming.....	1301			Arizona, 1907.....		72	638-640
United States.....	1330, 1385			Arkansas, 1905.....		65	350-355
(<i>See also</i> Public works, preference of resident laborers on.)				1907.....		73	1043-1046
Antitrust act:				Armed guards, hiring:			
Texas.....	1170-1172			Illinois.....	296		
Texas (D.).....		75	633, 634	Massachusetts.....	529		
United States.....	1371-1373			Tennessee.....	1141		
United States (D.).....		70	710, 711	Wisconsin.....	1280		
Antitrust act, labor organizations not included under:				Assignment of wages:			
Louisiana.....	435			California.....	150		
Michigan.....	563			Colorado.....		73	10-9-1051
Minnesota.....	623			Connecticut.....	195	62	331
Montana.....	704			Illinois.....		61	1075
Nebraska.....	722			Indiana.....	339, 352		
North Carolina.....	860			Iowa.....		68	236
Wisconsin.....	1272			Louisiana.....		70	763
Appliances, safety, in factories. (<i>See</i> Inspection of factories, etc.)				Maine.....	458		
Appliances, safety, on railroads. (<i>See</i> Railroads, safety appliances on.)				Maryland.....		70	767, 768
Apprentice laws, digest of.....	13-30			Massachusetts.....	523	61	1067
				Minnesota.....		70	769, 770
				New Hampshire.....	738	63	584
				New Jersey.....	760, 761		
				New York.....	805	57	712
				Pennsylvania.....	1041		
				Rhode Island.....	1093, 1094		
				Tennessee.....	1141		
				Vermont.....		71	396
				Wisconsin.....		67	915
				(<i>See also</i> Payment of wages.)			
				Assignments of claims to avoid exemption laws. (<i>See</i> Exemption of wages, assignments to avoid.)			
				Associations, cooperative. (<i>See</i> Cooperative associations.)			
				Associations of employees. (<i>See</i> Benefit societies.)			
				Attachment of wages:			
				Connecticut.....	195		
				Pennsylvania.....	1040, 1041		
				Attorneys' fees in suits for wages. (<i>See</i> Suits for wages.)			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
B.									
Badges, etc., of labor organizations. (<i>See</i> Labor organizations, etc.)									
Bakeries, hours of labor of employees in. (<i>See</i> Hours of labor.)									
Bakeries, inspection, etc., of. (<i>See</i> Inspection, etc.)									
Bankruptcy:									
United States.....	1379, 1380								
Barber shops, inspection, etc., of:									
New Hampshire.....		76	1036						
Barbers, examination, etc., of. (<i>See</i> Examination, etc.)									
Barrooms, payment of wages in:									
California.....	139								
Benefit societies:									
Massachusetts.....	534								
Michigan.....	560								
Ohio.....	877								
Philippine Islands.....	1070-1072								
South Carolina.....	1112								
South Carolina (D.).....		77	386-388						
Benefit societies, forced contributions for. (<i>See</i> Forced contributions.)									
Blacklisting:									
Alabama.....	111								
Arkansas.....		65	351						
Colorado.....	155	02	330, 331						
Connecticut.....	196								
Florida.....	233, 234								
Illinois.....	279								
Indiana.....	341, 342								
Iowa.....	383								
Kansas.....	388								
Minnesota.....	612, 613								
Minnesota (D.).....	626	70	709, 710						
Missouri.....	636, 637								
Montana.....	695, 706								
Nevada.....	728, 729	63	588, 589						
North Dakota.....	862, 872								
Oklahoma.....	873								
Oregon.....	948, 949								
Texas.....	1168, 1170	79	972-974						
Utah.....	1173, 1175								
Virginia.....	1204								
Washington.....	1230								
Wisconsin.....	1279								
United States.....	1377								
(<i>See also</i> Interference with employment, and cross references.)									
Board of arbitration, etc. (<i>See</i> Arbitration of labor disputes.)									
Boarding houses. (<i>See</i> Lodging houses.)									
Boatmen. (<i>See</i> Seamen.)									
Boilers, creating an unsafe amount of steam in. (<i>See</i> Negligence of operators, etc.)									
Boilers, steam, inspection of. (<i>See</i> Inspection, etc.)									
Bonds, contractors'. (<i>See</i> Protection of wages.)									
Bonds of employees:									
Massachusetts.....	515								
New Mexico.....	783, 784								
Boycotting:									
Alabama.....	111								
Colorado.....	157	62	330, 331						
Illinois.....	279								
Indiana.....	328, 329								
Texas.....	1171								
(<i>See also</i> Interference with employment, and cross references.)									
Brakemen, sufficient number of. (<i>See</i> Railroad trains, sufficient crew required on.)									
Brakes on railroad trains. (<i>See</i> Railroads, safety appliances on.)									
Bribery, etc., of employees:									
Connecticut.....	62		332						
Indiana.....	74		269						
Iowa.....	74		277, 278						
Massachusetts.....	57		710						
Michigan.....	62		581						
Nebraska.....	76	1031	1032						
New York.....	64		905, 906						
Rhode Island.....	64		908, 909						
South Carolina.....	65		360						
Virginia.....	70		781, 782						
Washington.....	67		912						
Wisconsin.....	67		914, 915						
Bribery of representatives of labor organizations:									
New York.....		57	718						
Brickyards, hours of labor of employees in:									
New York.....	804, 827								
	828								
Bridges over railroads, height of. (<i>See</i> Railroads, height of bridges, etc., over.)									
Building associations of organized labor:									
New Jersey.....	748, 749								
New York.....	791								
Buildings, protection of employees on. (<i>See</i> Protection of employees, etc.)									
Bureau of Corporations:									
United States.....	1386, 1387								
Bureau of labor:									
California.....	140, 141	62	328						
Colorado.....	155, 156								
Connecticut.....	171								
Idaho.....	204								
Illinois.....	258, 262								
Indiana.....	263								
Iowa.....	286								
Kansas.....	358-360								
Kentucky.....	370-373	60	712						
Louisiana.....	407-410	68	235						
Maine.....	416-419								
Maryland.....	428, 429								
Massachusetts.....	447								
Michigan.....	452								
Minnesota.....	474, 475								
Missouri.....	527, 528								
Montana.....	542-544	75	655, 656						
Nebraska.....	581-583								
New York.....	663-665	76	1027, 1028						
North Dakota.....	680, 686								
Ohio.....	687								

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Bureau of labor—Cont'd.					Children and women, employment of, general provisions—Con.				
Nebraska.....	718, 719				Maine.....	453-455	73	701-703	
New Hampshire.....	740, 741				Massachusetts.....	517-521	73	711-718	
New Jersey.....	753, 778 780, 781	58	1018, 1019		Missouri.....	647, 648 666, 667	73	729-731	
New York.....	801, 802 808, 809				Missouri (D).....	724, 725	68	186, 187	
North Carolina.....	859, 860				Nebraska.....	737	73	748, 749	
North Dakota.....	862-864				New Hampshire.....	761-765			
Ohio.....	885-887				New Jersey.....	814-816			
Oklahoma.....	951-953	77	412		New York.....	823-825	73	758-763	
Oregon.....	1033, 1034				Pennsylvania.....	1043, 1044	73	788-790	
Pennsylvania.....	1086				Rhode Island.....	1083-1085 (1082, 1083)	73	791-794	
Rhode Island.....	1131, 1132				Children and women, employment of, in mines:				
Tennessee.....	1182, 1183				Alabama.....	104	73	656	
Utah.....	1199, 1207	70	781		Arkansas.....	122	73	660	
Virginia.....	1208				Colorado.....	155, 161	73	665, 667	
Washington.....	1234-1236				Illinois.....	310	73	685	
West Virginia.....	1254, 1255				Indiana.....	357	73	692	
Wisconsin.....	1265, 1266	79	998		Maryland.....	486	73	710	
United States.....	1321, 1322 1333, 1385	57	719		Missouri.....	657	73	730	
Bureau of Manufactures:					New York.....		73	763	
United States.....	1386				Oklahoma.....		73	776	
Bureau of mines:					Pennsylvania.....	979, 984	73	784-788	
Colorado.....	174-177				Utah.....	1172, 1174	73	800	
Missouri.....	658				Washington.....	1218	73	803	
Pennsylvania.....	1049-1052	67	912, 913		West Virginia.....	1251	73	807	
West Virginia.....		79	988-990		Wyoming.....	1300, 1303	73	814, 815	
(See also Mine employees, associations of.)					Children and women, hours of labor of:				
Bureau of public printing:					Colorado.....	191	73	666, 667	
Philippine Islands.....	1069, 1070				Connecticut.....	207	73	671	
C.					Louisiana.....	439	73	700	
California, 1905.....		62	328-330		Maine.....	453, 454	73	701	
1907.....		72	640-642		Maryland.....	475	73	704, 707	
Candidates for office, protection of employees as:					Massachusetts.....	516, 517	73	711-714	
Wyoming.....	1304				New Hampshire.....	737	73	716, 719	
Cause of discharge. (See Discharge, statement of cause of.)					New Jersey.....	764	73	748, 749	
Certificates, employers'. (See Employers' certificates.)					New York.....	823	73	750	
Charges, false, against railroad employees. (See Railroad employees, etc.)					North Dakota.....	874	73	771	
Check weighmen. (See Weighing coal at mines.)					Oklahoma.....	931	73	776	
Checks, payment of wages in. (See Payment of wages in scrip.)					Pennsylvania.....	1043	73	782, 788	
Child labor, national committee on, incorporation of:					Rhode Island.....	1092	73	794	
United States.....	71	399, 400			South Carolina.....		73	796	
Children and women, deductions from wages of:					South Dakota.....	1126	73	797	
Massachusetts.....	524	73	718		Tennessee.....		73	799	
Children and women, employment of, general provisions:					Virginia.....	1203	73	802	
Colorado.....	191	73	666-668		Wisconsin.....	1268	73	810, 812 813	
Indiana.....		73	661, 692		Children and women, wages of:				
Iowa.....		73	693		Massachusetts.....	524	73	718	
Louisiana.....	438, 439	73	700, 701		(See also Earnings of married women; Earnings of minors; Women's wages.)				
					Children, corporal punishment of, by employers:				
					Georgia.....	244	73	890	
					Children, earnings of. (See Earnings of minors.)				
					Children, employment of, age limit for:				
					Alabama.....	110	73	656-659	
					Arkansas.....	127, 128	73	660	

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Children, employment of, age limit for—Con.					Children, employment of, general provisions—Concluded.				
California	151	73	663		Georgia		73	680,681	
California (D)	68	73	199-202		Idaho		73	682,683	
Colorado	191	73	667		Illinois	315-319	73	684-689	
Connecticut	198,208	73	670		Indiana	344-346	73	691-693	
Delaware		73	673-675		Iowa		73	693-695	
District of Columbia		77	396-398		Kentucky		73	697-699	
Florida		73	678,679		Louisiana	438,439	73	699-701	
Georgia		73	680,681		Maine	453-455	73	701-703	
Georgia (D)		77	371,372		Maryland	472-474	73	704-710	
Idaho	258	73	682		Massachusetts	498	73	710-720	
Illinois	315	73	685-689		Michigan	517-521	73	722,723	
Illinois (D)		59	335-337		Minnesota	572,573	73	724-727	
Indiana	325,345	73	691		Mississippi	579,580	73	727	
Iowa	376,381	73	693-695		Missouri	610-612	73	731-738	
Kansas	397	73	696		Montana	628	73	738-741	
Kentucky	417,428	73	696-699		Nebraska	687,688	73	741-746	
Louisiana	438	73	700		New Hampshire	734,735	73	747-749	
Maine	454	73	702,703		New Jersey	753,754	73	750-754	
Maryland	476	73	705-709		New York	762,767	73	756-767	
Massachusetts	517,536	73	713,719		North Carolina	811-813	73	768,769	
Michigan	546,572	73	720		North Dakota	823-826	73	770,771	
Michigan (D)		64	881,882		Ohio	828	73	772-776	
Minnesota	610,611	73	724-727		Oklahoma	883,894	73	776	
Missouri	637,638	73	728,729		Oregon	903,904	73	777-779	
Montana		72	732-735		Pennsylvania	907,908	73	782-790	
Nebraska	724	73	737		Pennsylvania (D)	1043	64	887-889	
New Hampshire	735	73	739,740		Porto Rico		73	790	
New Jersey	753	73	742,743		Rhode Island	1076	73	791-793	
New Jersey (D)		77	747,748		South Carolina	1083-1085	73	796,796	
New York	796,811	73	751-754		South Dakota	1112-1114	73	797	
North Carolina	823,825	73	757-761		Tennessee	1116	73	798,799	
North Carolina (D)	857,861	73	763,764		Texas	1169	73	800,801	
North Dakota		67	768,769		Vermont	1185	73	805,806	
Ohio	862,864	73	770		Washington	1231,1232	73	807	
Oklahoma	883,903	73	775		West Virginia	1268,1269	73	810-811	
Oregon	924	77	412,413		Wisconsin	1285-1287	73		
Pennsylvania	947	73	777		(See also Children and women.)				
Pennsylvania (D)	979,991	73	784		Children, employment of, in barrooms:				
Rhode Island	1043	74	788-790		Arizona		73	659,660	
South Carolina		78	791		Connecticut	199	73	670	
South Dakota	1063,1064	73	795		District of Alaska	224	73	675	
Tennessee	1112-1114	73	796,797		Georgia	248	73	680	
Texas	1115,1116	73	798		Hawaii	257	73	682	
Vermont	1133	73	799		Idaho		73	683	
Virginia	1169	73	801		Illinois		73	689	
Washington	1198	73	803		Indiana		73	690	
Washington (D)	1210,1211	73	806		Maryland	468,471	73	704,705	
West Virginia	1241,1242	61	1054,1055		Massachusetts	501,502	73	711	
Wisconsin		73	807		Minnesota		73	727	
Wyoming	1252	73	809-812		New Hampshire		73	749	
United States	1382,1383	73	814,815		Pennsylvania		73	780	
(See also Children and women, employment of, in mines.)			816		South Dakota	1117	73	797	
Children, employment of, general provisions:					Texas		73	799	
Alabama	110,111	73	656-659		Vermont	1199	73	974	
Arizona		73	659		West Virginia		73	801	
Arkansas	127,128	73	660,661		Children, employment of, in certain occupations, forbidden:				
California	151	73	662-665		California	137	73	661,662	
Colorado	156,157	73	666-669		California (D)		68	202,203	
Connecticut	183,184	73	666-669		Colorado	167	73	665,666	
Delaware	197,198	73	669-671		Connecticut	196	73	669	
District of Columbia		73	673-675		Delaware	218	73	672	
Florida	232	73	676,677						
			396-398						
			678,679						

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Children, employment of, in certain occupa- tions, forbidden—Con-				Children, hours of labor of—Concluded.			
District of Columbia.	225	73	675	Idaho.		73	683
Florida.		73	677	Illinois.	315, 318	73	688
Georgia.	249	73	680	Indiana.		73	691, 693
Idaho.		73	683	Iowa.		73	694
Illinois.	280, 318	73	684	Kentucky.		73	697
Indiana.	325	73	688, 689	Louisiana.		73	700
Iowa.	381	73	690	Maine.		73	701
Kansas.	387	73	694	Maryland.	466	73	704, 707
Kentucky.	419	73	695, 696	Massachusetts.		73	711-714
Louisiana.	439	73	697	Michigan.	546, 572	73	716, 719
Maine.		73	703	Minnesota.		73	722
Maryland.	468, 469	73	704, 705	Missouri.	589, 602	73	723
Massachusetts.	520, 521	73	716, 717	Nebraska.		73	724, 726
Michigan.	552, 553	73	721, 722	New Hampshire.		73	733
Minnesota.	002	73	724, 726	New Jersey.		73	745, 746
Missouri.	637	73	728	New York.	812, 823	73	748, 749
Montana.	704	73	734, 735	North Carolina.		73	750, 753
Nebraska.		73	739	North Dakota.	861	73	761-763
New Hampshire.	739	73	747	Ohio.	924, 925	73	768, 769
New Jersey.	779	73	751	Oklahoma.		73	771
New York.	792, 793	73	755, 756	Oregon.	947	73	776
Ohio.	924	73	762	Oregon (D).		68	777
Oklahoma.		73	774, 775	Pennsylvania.		73	203, 204
Pennsylvania.	978, 979	73	780, 781	Porto Rico.	1076	73	782, 788
Porto Rico.	1080	73	790	Rhode Island.		73	790
Rhode Island.	1090, 1091	73	793	South Carolina.		73	794
Virginia.	1205, 1206	73	803	South Dakota.		73	796
West Virginia.	1260, 1261	73	808	Tennessee.		73	797
Wisconsin.	1280, 1288	73	810, 813	Virginia.		73	799
Wyoming.	1302, 1303	73	815	Wisconsin.	1281, 1286	73	802
Children, employment of, in mines:				(See also Children and women.)			810
Colorado.		73	665, 667	Children, night work by:			812, 813
Idaho.		73	682	Alabama.	110	73	656, 657
Kansas.		73	695	Arkansas.	128	73	660
Montana.		73	738	California.		73	663
North Carolina.		73	769	District of Columbia.		77	396
Ohio.		73	771	Florida.		73	678
Oklahoma.		77	412	Georgia.	243	73	681
Oregon.		73	777	Idaho.		73	682
Pennsylvania.		73	781	Illinois.	315, 318	73	688
Pennsylvania (D).	64	73	784-788	Indiana.		73	692
South Dakota.	73	73	887-889	Iowa.		73	694
Texas.	73	73	796, 797	Kentucky.		73	697, 698
West Virginia.	73	73	799	Massachusetts.	517	73	713
United States.	73	73	807	Michigan.	572	73	722
Children, employment of, in street trades:				Minnesota.	610	73	724, 726
District of Columbia.		77	398	Missouri.	665	73	730, 732
Massachusetts.		73	711, 719	Nebraska.		73	746
New York.		73	765-767	New Jersey.	764, 772	73	751, 753
Children, hiring out, to support parents in idleness:				New York.	812, 823	73	761, 763
Alabama.	111	73	657	North Carolina.		73	769
Georgia.	248	73	680	Ohio.	924, 925	73	775, 776
Louisiana.		73	700	Oregon.	947	73	777
Mississippi.		73	728	Pennsylvania.	1041	73	782, 788
North Carolina.		73	769	Rhode Island.		73	791
Tennessee.		73	799	South Carolina.	1112, 1113	73	796
Virginia.		73	802	Texas.		73	799
Children, hours of labor of:				Vermont.		73	801
Alabama.	110, 111	73	656, 657	Virginia.	1210, 1211	73	802, 803
Arkansas.	128	73	660	Washington.	1241	73	806
California.	151	73	662, 663	Wisconsin.	1286	73	812, 813
Colorado.		73	666, 667	Children. (See Children and women.)			
Connecticut.		73	671	Chinese, employment of:			
Delaware.		73	674	California.	129		
District of Columbia.		77	398	Montana.	713		
Florida.		73	678	Nevada.	729		
Georgia.	243	73	679	United States.	1385		
				Chinese, exclusion, reg- istration, etc., of:			
				District of Alaska.	225		
				Hawaii.	252, 253		
				Philippine Islands.	1069, 1072		
					1073		

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Chinese, exclusion, registration, etc., of—Con.					Combinations to fix wages:				
United States.....	1323, 1324 1326-1330 1384, 1387	57	719, 720		Louisiana.....		57	704	
Chinese labor, products of, not to be bought by State officials:					Commerce and Labor, Department of:				
California.....	131				United States.....	1385-1387			
Cigar factories, regulation of:					Commission, labor.				
Wisconsin.....	1281				(See Labor commission.)				
Citizens to be employed. (See Allens, employment of; Public works, preference of resident laborers on.)					Commissioner of labor.				
Civil service:					(See Bureau of labor.)				
Colorado.....		73	1046		Company doctors:				
Louisiana.....	448				Tennessee.....	1131			
Massachusetts.....	497, 498				Company stores:				
Minnesota.....	607				Arkansas.....	127			
New York.....	795				Colorado.....	186			
Ohio.....	888, 889				Connecticut.....	208			
Pennsylvania.....		70	780		Indiana.....	339, 340			
Wisconsin.....		78	629		Maryland.....	464, 496			
Coal mined within State, use of, in public buildings. (See Public supplies.)		67	918		New Jersey.....	760			
Coal mines, ventilation of. (See Mine regulations.)					New York.....		69	461, 462	
Coal, weighing. (See Weighing coal.)					Pennsylvania.....	981, 1030			
Coercion of employees in trading, etc.					Virginia.....	1202, 1203			
Arkansas.....	127				(See also Coercion of employees in trading; Payment of wages in scrip.)				
Colorado.....	186				Compensation for injuries to Federal employees:				
Florida.....	237				United States.....		77	415, 416	
Indiana.....	340, 341				Complaints by railroad employees:				
Iowa.....	378				Massachusetts.....	530			
Kentucky.....	427				Conciliation. (See Arbitration.)				
Maryland.....	476				Connecticut, 1905.....		62	331-333	
Massachusetts.....	514, 515				1907.....		73	1051-1054	
Michigan.....	560, 561				Conspiracy against workingmen:				
Montana.....	712, 713				Alabama.....	111			
Nevada.....	734				Florida.....	232, 233			
New Jersey.....	780				Georgia.....	246, 247			
New Mexico.....	786				Kansas.....	388			
Ohio.....	925				Minnesota.....	600, 601			
Oregon.....		78	624		Mississippi.....	626			
Tennessee.....	1129-1131				New York.....	796, 797			
Texas.....	1170				North Dakota.....	872			
Utah.....	1181				(See also Interference with employment, and cross references.)				
Washington.....	1222	79	985		Conspiracy, labor agreements not:				
West Virginia.....	1255, 1256				California.....	154			
(See also Company stores.)					California (D).....		68	181-183	
Coercion. (See Intimidation; Protection of employees, etc.)					Colorado.....	157			
Collection of statistics. (See Bureau of labor; Statistics, collection of.)					Maryland.....	464			
Colorado, 1905.....		62	330, 331		Minnesota.....	601, 603			
1907.....		73	1046-1051		Nevada (D).....		78	597-601	
Color blindness of railroad employees. (See Examination, etc., of railroad employees.)					New Jersey.....	760			
Combination, right of. (See Conspiracy, labor agreements not; Protection of employees as members of labor organizations.)					New York.....	797			
					North Dakota.....	872			
					Pennsylvania.....	970, 971 1034-1037			
					Porto Rico.....	1079			
					Conspiracy. (See Interference; Intimidation.)				
					Contract labor, alien. (See Alien contract labor.)				
					Contract, violation of, endangering life:				
					New York.....	830			
					Contract work on public buildings:				
					California.....	130			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Contractors' bonds. (See Protection of wages.)					Cooperative associations—Concluded.				
Contractors' debts. (See Liability of railroad companies, etc.; Protection of wages.)					Ohio.....	902, 903			
Contracts limiting liability of employers. (See Liability of employers for injuries, etc.)					Pennsylvania.....	902-909			
Contracts of employees waiving right to damages:					Wisconsin.....	1273			
Colorado.....	154				Wyoming.....	1301			
Georgia.....	243				Cooperative insurance. (See Insurance, co-operative.)				
Indiana.....	342-344				Copyrights:				
Massachusetts.....	515				United States.....	1378, 1379			
Montana.....	680, 698				Corporal punishment of minor employees:				
Wyoming.....	707				Georgia.....	244			
United States.....	1301, 1304				Corporations, Bureau of:				
(See also Liability of employers for injuries, etc.)	1377				United States.....	1386, 1387			
Contracts of employment involving removal from home locality:					Corporations, liability of stockholders in. (See Liability of stockholders, etc.)				
Michigan.....	579, 580				Corporations, pensions for employees of:				
Contracts of employment, regulation, etc., of:					Pennsylvania.....	970			
Arkansas.....	119, 120				Corporations, profit sharing by. (See Profit sharing.)				
Georgia.....	246				Corporations, restriction of powers of:				
Hawaii.....	252, 253				Pennsylvania.....	981, 1030			
Idaho.....	266				Corporations, special stock for employees of:				
Louisiana.....	440, 444				Massachusetts.....	529, 530			
Louisiana (D).....		67	861		Costs in suits for wages. (See Suits for wages.)				
Michigan.....	579, 580				Couplers, safety. (See Railroads, safety appliances on.)				
Mississippi.....	632								
New York.....	830				D.				
Porto Rico.....	1079				Damages for injuries. (See Injuries; Liability of employer.)				
South Carolina.....	1109				Damages, waiver of right to. (See Contracts of employees waiving right to damages.)				
Contracts of employment with intent to defraud:					Day of rest. (See Weekly day of rest.)				
Alabama.....	106, 107	73	1043		Death. (See Injuries causing death; Negligence, etc.)				
Georgia.....	232				Deceased employees, payment of wages due. (See Payment of wages due deceased employees.)				
Georgia (D).....		74	212-216		Deception in employment of labor. (See Employment of labor, deception in.)				
Michigan.....	580				Delaware, 1905.....		62	333	
Minnesota.....	623				1907.....		76	1621	
North Carolina.....	853				Department of Commerce and Labor:				
South Carolina.....	1109	60	714		United States.....	1385-1387			
Contracts of employment. (See Employment of labor, and cross references.)					Department of Labor, (See Bureau of labor.)				
Contributions, forced. (See Forced contributions.)					Discharge, etc., of employees of public-service corporations:				
Convict labor, digest of laws relating to.....	30-50				Massachusetts.....	537			
Coolie labor:					Discharge, notice of intention to. (See Employment, termination of, notice of.)				
California.....	129				Discharge of employees on account of age:				
Nevada.....	728				Colorado.....	190, 191			
United States.....	1323, 1324								
Cooperative associations:									
California.....	146-149								
Connecticut.....	201, 202								
Illinois.....	275-279								
Kansas.....	386								
Maryland.....	461								
Massachusetts.....	529								
Michigan.....	557-559								
Minnesota.....	597	76	1023, 1024						
Montana.....	606-608								
Nevada.....	729-731								
New Jersey.....	740-751								

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Discharge, statement of cause of:					Earnings of minors:				
Florida.....	233, 234				California.....	132	73	661	
Indiana.....	341, 342				Idaho.....	271	73	682	
Missouri.....		61	1092		Iowa.....	379	73	693	
Montana.....	695				Minnesota.....	590	73	723, 724	
Ohio.....	899				Montana.....	696	73	739	
Wisconsin.....	1279, 1280				New York.....	799	73	758	
(See also Blacklist- ing; Employment of labor.)					North Dakota.....	866	73	771	
Discharged employees, payment of wages due. (See Payment of wages due, etc.)					Ohio.....	907, 908	73	773, 774	
Discounting of wages. (See Payment of wages, modes and times of.)					Oklahoma.....	931	73	776	
District of Columbia:					Porto Rico.....	1081, 1082	73	790	
1905, 1906.....		68	229-234		South Carolina.....	1104	73	794	
1906, 1907.....		71	394		South Dakota.....	1118	73	797	
1907, 1908.....		77	306-398		Utah.....	1177	73	800	
Divorce, etc., statistics of, to be procured:					Virginia.....		73	802	
California.....		62	328		Washington.....	1226	73	804	
Domestic products, preference of, for public use. (See Public supplies.)					Wisconsin.....		73	814	
Drinking water for employees in factories:					Eight-hour day:				
Massachusetts.....	536	73	870		Arizona.....	116			
Rhode Island.....		73	964		Arkansas.....	125			
Drug clerks, hours of labor of. (See Hours of labor of drug clerks.)					California.....	{ 129, 131	62	329, 330	
					Colorado.....	139, 153			
					Colorado (D).....	154, 172	62	331	
					Connecticut.....		69	453-455	
					Delaware.....	207			
					District of Columbia.....	223, 224			
					Hawaii.....	253			
					Idaho.....	258, 264			
					Illinois.....	281, 291			
					Indiana.....	338			
					Iowa.....	368			
					Kansas.....	390			
					Maryland.....	486			
					Massachusetts.....	515, 516	70	773	
					Minnesota.....	624, 625			
					Missouri.....	{ 650, 652			
						653, 663	61	1092, 1093	
						677			
					Montana.....	{ 708, 711	62	585, 586	
						713	70	711-713	
					Montana (D).....				
					Nebraska.....	{ 722, 725			
						725, 726	63	586	
					Nevada.....	{ 731, 732	59	334, 335	
					Nevada (D).....				
					New Mexico.....	788			
					New York.....	{ 800, 801	69	470	
						803, 845	57	637, 638	
					New York (D).....				
					Ohio.....	907			
					Oklahoma.....	932	77	412	
					Oregon.....	945	78	622, 623	
					Pennsylvania.....	{ 980, 1068			
						1069			
					Porto Rico.....	1079	59	385	
					South Dakota.....	1116			
					Tennessee.....	1139			
					Texas.....	1163			
					Utah.....	1173, 1174			
					Washington.....	1231, 1239			
					Washington (D).....		57	685-687	
					West Virginia.....	1257			
					Wisconsin.....	1267-1269			
					Wyoming.....	{ 1301, 1302			
						1312			
					Wyoming (D).....		69	455-457	
					United States.....	{ 1331-1333			
						1385			
					United States (D).....		70	714-717	
							71	359-367	
							68	175-180	
							74	198-200	
							79	950-952	
					United States (Op.).....				
					Electric companies, protection of employees of:				
					Massachusetts.....	533			
					Elevators, examination, etc., of operators of:				
					Minnesota.....	623, 624			

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Elevators. (<i>See</i> In- spection of factories, etc.)				Employers' advances, repayment of:			
Emigrant agents:				Alabama.....	109		
Alabama.....	111, 112			Arkansas.....		73	1044, 1045
Florida.....	239			Florida.....	238, 239	73	1054
Georgia.....	248, 252	59	378	Louisiana.....	440		
Hawaii.....		62	334	Louisiana (D).....		67	861
North Carolina.....	861			Michigan.....	580		
North Carolina (D).....		57	688	Minnesota.....	623		
South Carolina.....	1111	78	631	New Mexico.....		61	1003, 1004
(<i>See also</i> Employ- ment offices.)				South Carolina.....	1109	60	714
Employees' bonds. (<i>See</i> Bonds of em- ployees.)				South Carolina (D).....		73	1022-1029
Employees, bribery, etc., of. (<i>See</i> Bri- bery of employees.)				(<i>See also</i> Contracts of employment with intent to defraud.)			
Employees, deceased, payment of wages due. (<i>See</i> Payment of wages, etc.)				Employers' certificates, forgery of:			
Employees, discharge of. (<i>See</i> Discharge, statement of cause of; Employment of labor.)				Georgia.....	250		
Employees, discharged, payment of wages due. (<i>See</i> Payment of wages, etc.)				Pennsylvania.....	1046		
Employees, enticement of. (<i>See</i> Enticing employees.)				Wisconsin.....	1285		
Employees, examina- tion of. (<i>See</i> Exam- ination, etc.)				Employers' liability. (<i>See</i> Liability of em- ployers for injuries, etc.)			
Employees, false charges against. (<i>See</i> Railroad employees, false charges against.)				Employers to furnish names of employees to officials of county, etc.:			
Employees, forced con- tributions from. (<i>See</i> Forced contribu- tions.)				Arkansas.....	128		
Employees, intimidat- ion of. (<i>See</i> Intimi- dation.)				New Mexico.....		61	1094
Employees, intoxica- tion of. (<i>See</i> Intoxi- cation, etc.)				South Carolina.....	1102	72	659
Employees not to be discharged on ac- count of age:				Wyoming.....		61	1094, 1095
Colorado.....	190, 191			Employment, abandon- ment of. (<i>See</i> Con- tracts of employment.)			
Employees, protection of. (<i>See</i> Protection of employees, etc.)				Employment agents. (<i>See</i> Employment of frees.)			
Employees, railroad. (<i>See</i> Railroad em- ployees.)				Employment, contracts of. (<i>See</i> Contracts of employment; Em- ployment of labor.)			
Employees, sale of liquor to. (<i>See</i> Liquor, sale of, to employees.)				Employment, foremen, etc., accepting fees for furnishing:			
Employees, soliciting money from. (<i>See</i> Employment, fore- men, etc., accepting fees for furnishing.)				Connecticut.....	208		
Employees, taxes of. <i>See</i> Liability of em- ployers for taxes, etc.)				Montana.....		72	648
Employees, time for, to vote. (<i>See</i> Time to vote, etc.)				Pennsylvania.....	1055		
Employer and em- ployee, obligations of. (<i>See</i> Employment of labor.)				Employment, interfer- ence with. (<i>See</i> Inter- ference with employ- ment.)			
				Employment, notice of termination of. (<i>See</i> Employment, termina- tion of, etc.)			
				Employment, obtaining under false pretenses. (<i>See</i> Contracts of em- ployment with in- tent to defraud; Em- ployers' certificates, forgery of.)			
				Employment of aliens. (<i>See</i> Aliens.)			
				Employment of children and women. (<i>See</i> Children and women, etc.)			
				Employment of child- ren. (<i>See</i> Children, employment of.)			
				Employment of Chi- nese. (<i>See</i> Chinese, employment of.)			
				Employment of inter- temperate drivers, etc. (<i>See</i> Intemperate em- ployees, etc.)			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Employment of labor by public-service corporations:					Employment offices—Concluded.				
Massachusetts.....	337				New York.....	809, 810 828	57	713-715 460	
Employment of labor, deception in:					New York (D).....		60	462-467 890, 891	
California.....	154				Ohio.....	885, 886 896	64	379, 380 382, 383	
Illinois.....	206, 297				Pennsylvania.....	979, 980	78	625-628	
Montana.....	711, 712				Rhode Island.....	1083			
New Jersey.....	779				Tennessee.....	1139	79	970, 971	
Oregon.....	950, 951				Virginia.....	1210	60	716	
Tennessee.....	1140, 1141				Virginia (D).....		70	728, 729	
Employment of labor, general provisions:					West Virginia.....	1261	79	998	
Arkansas.....	119, 120				Wisconsin.....	1283, 1284 1298-1300			
California.....	132-136				(See also Emigrant agents; Lodging houses, sailors.)				
Connecticut.....	207-209				Employment, prevention of. (See Interference with employment, and cross references.)				
Georgia.....	243-245				Employment, sex no disqualification for. (See Sex no disqualification, etc.)				
Illinois.....	206, 297				Employment, termination of, notice of:				
Indiana.....	323, 344				Maine.....	454			
Louisiana.....	443, 444				Massachusetts.....	514			
Massachusetts.....	313-315 337				New Jersey.....	765			
Minnesota.....	612, 626				Pennsylvania.....	1037			
Missouri.....	633, 634				Rhode Island.....	1093			
Montana.....	698-701				Wisconsin.....	1287			
New York.....	802, 805				(See also Employment of labor, general provisions.)				
North Dakota.....	864-870	77	411		Engineers, examination, etc., of. (See Examination, etc.)				
Porto Rico.....	1082, 1083				Engineers, illiterate, employment of, on railroads. (See Railroads, illiterate employees on.)				
South Carolina.....	1104, 1105				Engineers, unlicensed, employment of, on steamboats:				
South Dakota.....	1119-1123				Alabama.....	107			
Utah.....	1172, 1173				Enticing employees, etc.:				
Wyoming.....	1300				Alabama.....	108, 109			
(See also Contracts of employment; Discharge, statement of cause of; Employers' advances; Employment, termination of; Examination, etc.; Inspection of factories; Wages, etc.)					Arkansas.....	119	65	354	
Employment of policemen as laborers:					Florida.....	231			
Maryland.....	492, 493				Georgia.....	247			
Employment of women. (See Women, employment of.)					Kentucky.....	421			
Employment offices:					Louisiana.....	440	70	704, 705	
California.....	152, 153	62	329		Mississippi.....	629			
California (D).....		57	693-696		North Carolina.....	861			
Colorado.....	168-170	73	1048, 1049		South Carolina.....	1110			
Connecticut.....	204, 206 212	62	333		Tennessee.....	1128, 1129	65	339-342	
District of Columbia.....	230	68	231-234		West Virginia (D).....				
Hawaii.....		71	394		(See also Interference, etc.)				
Idaho.....	270, 274	74	261		Examination, etc., of barbers:				
Illinois.....	319-321	74	276, 277		Connecticut.....	206, 207 213	62	332, 333	
Kansas.....	391, 392				Delaware.....	221-223			
Kentucky.....	426				Kansas.....	411-414	61	1080	
Louisiana.....	440				Kentucky.....	429-431			
Maine.....	450, 451	72	645, 646		Maryland.....		57	705-707	
Maryland.....	475				Maryland (D).....		59	338-340	
Massachusetts.....	502	70	771		Michigan.....	549, 570			
Michigan.....		63	577		Minnesota.....	619-621			
		75	654, 655		Missouri.....	641-644			
		63	584, 585		New York.....	847-850	69	461	
Minnesota.....	588, 589	63	1021 1022, 1024						
		623	1090 1025						
Missouri.....	636, 665	61							
Montana.....	687, 696	76							
Nebraska.....	719								
Nevada.....	726								
New Hampshire.....	744								
New Jersey.....	779	77	399-402						

	Tenth special.			Bulletin.				Tenth special.			Bulletin.		
	Page.	No.	Page.	Page.	No.	Page.		Page.	No.	Page.	Page.	No.	Page.
Examination, etc., of barbers—Concluded.													
North Dakota.....	874-876												
Oregon.....	941-944	78	621, 622										
Oregon (D).....		57	696-698										
Rhode Island.....	1097-1101												
Texas.....		79	975, 976										
Utah.....	1192-1195	79	980, 981										
Washington.....	1239-1238												
Washington (D).....		58	992-994										
Wisconsin.....	1293-1295	76	992-994										
		79	999										
Examination, etc., of engineers of vessels. (See Examination, etc., of steam engi- neers.)													
Examination, etc., of horseshoers:													
Colorado.....	181, 182												
Hawaii.....		62	334										
Maryland.....	495, 496												
Michigan.....	571, 572												
Minnesota.....	618, 619												
New York.....	826-828	77	402										
Ohio.....	927-929												
Washington.....	1233, 1234												
Washington (D).....		58	994, 995										
Examination, etc., of miners, mine foremen, etc.:													
Alabama.....	100												
Illinois.....	302-304												
Illinois (D).....		71	382-385										
Indiana.....	357, 358												
Iowa.....	376, 377												
Missouri.....	661, 662												
Montana.....	677-680												
Pennsylvania.....	694												
Pennsylvania (D).....	992, 993												
Tennessee.....	1012, 1020												
Utah.....	1022												
Wyoming.....	1051-1054												
Examination, etc., of operators of elevators:													
Minnesota.....	623, 624												
Examination, etc., of plumbers:													
California.....	139												
Colorado.....	172-174												
District of Columbia.....	229												
Illinois.....	295, 296												
Illinois (D).....		70	730-732										
Kansas.....	415, 416												
Louisiana.....	448												
Maine.....		61	1085										
Maryland.....	488, 489												
Massachusetts.....	504, 505												
Michigan.....	570-579												
Minnesota.....	621-623												
Minnesota (D).....		62	322, 323										
Missouri.....	675-677												
Nebraska.....	713-715												
New Hampshire.....	742, 743												
New York.....	793-795												
Oregon.....	949, 950												
Pennsylvania.....	1046, 1047												
Porto Rico.....	1057-1060												
Texas.....	1080												
Texas (D).....	1165, 1166												
Virginia.....	1209, 1210	68	204, 205										
Washington.....	1232, 1233	67	907-909										
Washington (D).....		67	875-877										
Wisconsin.....	1264												
Examination, etc., of railroad employees:													
Alabama.....	105-107												
Massachusetts.....	531												
Ohio.....	897, 898												
Examination, etc., of stationary firemen:													
Massachusetts.....	502-504	61	1087, 1088										
Montana.....	682-684	70	770										
New York.....	843, 844	75	652, 653										
Examination, etc., of steam engineers:													
Alabama.....	105-107												
District of Columbia.....	228												
Florida.....	238												
Illinois.....	303												
Indiana.....	357, 358												
Iowa.....	376, 377												
Maine.....	456												
Maryland.....	486-488												
Massachusetts.....	502-504	61	1087, 1088										
Minnesota.....	586, 587	70	770										
Missouri.....	682	75	652, 653										
Montana.....	682-684												
Nevada.....	704, 705												
New Hampshire.....	736, 737	63	587, 588										
New Jersey.....	768, 769	76	1035										
New York.....	832, 843	70	590, 591										
Ohio.....	914-916	69	378, 379										
Pennsylvania.....	1036, 1057	65	356, 357										
Philippine Islands.....	1074-1076	78	630										
United States.....	1342	71	390										
Examination, etc., of street-railway em- ployees:													
New York.....	834												
Washington.....	1236												
Examination, etc., of telegraph operators on railroads:													
Georgia.....	241												
Execution, exemption from. (See Exemption, etc.)													
Executions in suits for wages. (See Suits for wages.)													
Exemption of mechan- ics, etc., from license tax. (See License tax, etc.)													
Exemption of wages, assignments to avoid:													
Georgia.....	249, 250												
Illinois.....	296, 297												
Indiana.....	325, 326												
Iowa.....	380												
Maryland.....		70	767										
Minnesota.....	615, 616												
Nebraska.....	723												
Ohio.....	925												
Pennsylvania.....	973												
Virginia.....	1204, 1205												
West Virginia.....	1242, 1243												
Wisconsin.....	1278												
Wyoming.....	1303, 1304												
Exemption of wages from execution, etc.:													
Alabama.....	99, 106												
Alabama (D).....		63	552, 553										
Arizona.....	112, 113	72	638, 640										
Arkansas.....	118												
California.....	136												

	Tenth special.			Bulletin.				Tenth special.			Bulletin.		
	Page.	No.	Page.	Page.	No.	Page.		Page.	No.	Page.	Page.	No.	Page.
Exemption of wages from execution, etc.—													
Concluded.													
Colorado.....	158												
Connecticut.....	212												
Delaware.....	215, 216												
District of Alaska.....	225												
District of Columbia.....	226												
Florida.....	230, 231												
Georgia.....	246												
Hawaii.....	257												
Idaho.....	272												
Illinois.....	287, 322												
Indiana.....	324												
Iowa.....	380	60	712										
Kansas.....	405	61	1083										
Kentucky.....	422, 428												
Louisiana.....	445	57	704										
Maine.....	457												
Maryland.....	461												
Massachusetts.....	535, 536												
Michigan.....	541, 542												
Minnesota.....	561												
Mississippi.....	598, 599												
Missouri.....	630												
Missouri.....	633, 640												
Missouri.....	641												
Montana.....	702												
Nebraska.....	723	76	1031										
Nevada.....	726												
New Hampshire.....	739												
New Jersey.....	748												
New Mexico.....	783												
New York.....	801												
North Dakota.....	871												
Ohio.....	920-923												
Oklahoma.....	931, 932												
Oregon.....	935												
Pennsylvania.....	973, 1040												
Porto Rico.....		59	385										
Rhode Island.....	1094												
South Carolina.....	1107												
South Dakota.....	1123, 1124												
Tennessee.....	1128, 1133												
Tennessee.....	1134, 1137	65	362										
Tennessee.....	1156												
Texas.....	1156, 1159												
Texas.....	1160												
Utah.....	1179												
Vermont.....	1195												
Virginia.....	1201, 1207												
Washington.....	1226, 1227												
Wisconsin.....	1276												
Wyoming.....	1315												
Exemption of wages, set-offs not to defeat:													
Alabama.....	106												
Extortion:													
Minnesota.....	903												
New York.....	800												
(See also Intimidation.)													
F.													
Factories, accidents in.													
(See Accidents, etc.)													
Factories, fire escapes on.													
(See Fire escapes, etc.)													
Factories, etc., inspection of.													
(See Inspection, etc.)													
Factories, pure drinking water to be supplied in:													
Massachusetts.....	536	73	870										
Factories, smoking in:													
Minnesota.....	603	73	887										
Factory inspectors.													
(See Inspectors, factory.)													
Factory regulations.													
(See Inspection of factories, etc.)													
False charges against railroad employees.													
(See Railroad employees, etc.)													
False credentials, etc., of labor organizations.													
(See Labor organizations, using false cards of.)													
False labels on manufactured articles:													
California.....	138												
False pretenses.													
(See Contracts of employment with intent to defraud; Employers' certificates, forgery of; Employment of labor, deception in.)													
Fees for furnishing employment.													
(See Employment, foremen, etc., accepting fees for furnishing.)													
Fellow-servant, negligent, to be named in verdict:													
Minnesota.....	615												
Fellow-servants:													
Arizona.....	113												
Arkansas.....	125												
California.....	132, 133												
Colorado.....	172												
Texas.....	1167												
Utah.....	1175												
(See also Employment of labor; Liability of employers for injuries to employees.)													
Female employees, seats for.													
(See Seats for female employees.)													
Female employees.													
(See Women, employment of.)													
Fines for imperfect work:													
Massachusetts.....	523												
Fire escapes on factories, etc.:													
Connecticut.....	198, 199	73	821, 822										
Delaware.....	217, 218	73	825, 826										
District of Columbia.....	227, 228	73	828, 829										
Georgia.....	244	73	830										
Idaho.....	274	73	831										
Illinois.....	297, 298	73	833, 834										
Indiana.....	327, 328	73	841, 843										
Indiana.....	365, 366	73											
Iowa.....	352	73	847, 848										
Kansas.....	414, 415	73	849, 850										
Kentucky.....		73	852										
Louisiana.....	441, 442	73	853										
Maine.....	450	73	855, 856										
Maryland.....	486	73	859										
Massachusetts.....	507	73	864-866										
Michigan.....	552, 573	73	876										
Michigan.....		73	878, 879										
Minnesota.....	590, 591	73	884										
Minnesota.....	606, 607	73											
Missouri.....	647, 674	73	891, 893										
Missouri.....	675	73	894, 896										
Missouri.....		73	899										
Nebraska.....	716, 717	73	902, 903										
New Jersey.....	752	73	904										
New Jersey.....		73	907-910										

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Fire escapes on factories, etc.—Concluded.					Guards, armed. (<i>See</i> Armed guards.)				
New York.....	814	73	916, 917		Guards on threshing machines, etc.:				
North Dakota.....	865	73	927		Illinois.....	268			
Ohio.....	859, 892	73	931-933		Iowa.....	383			
	893, 895				Wisconsin.....	1278	67	916, 917	
	976-978								
Pennsylvania.....	1030, 1031	73	947-950		H.				
	1045, 1058		952, 953		Half holidays for employees on public works:				
	1059		957		Massachusetts.....	496			
Rhode Island.....	1086-1089	73	960-962		Hawaii, 1904 (U. S.).....	57		702	
South Dakota.....	1117	73	964		1905.....	62		333-335	
Vermont.....	1197, 1198	73	966		1907.....	74		261, 262	
Virginia.....	1203, 1204	73	966		Highways, hours of labor on. (<i>See</i> Hours of labor on public roads.)				
West Virginia.....		73	974, 975		Hiring. (<i>See</i> Employment of labor.)				
Wisconsin.....	1277, 1278	73	977, 978		Holidays for per diem employees of Government:				
	1292, 1293		985, 986		United States.....	1322, 1323			
Fire, safeguards against, in factories. (<i>See</i> Inspection of factories, etc.)						1332			
Firemen, stationary, examination, etc., of. (<i>See</i> Examination, etc.)					Holidays in the different States and Territories, list of.....	92-94			
Florida, 1907.....		73	1054		Horseshoers, examination, etc., of. (<i>See</i> Examination, etc.)				
Forced contributions from employees:					Hospital fees. (<i>See</i> Forced contributions, etc.)				
Indiana.....	326				Hospital for miners. (<i>See</i> Miners' hospitals.)				
Maryland.....	464				Hospital (pesthouse), erection of, for employees:				
Michigan.....	563				New Mexico.....	788			
Nevada.....	732, 733				Hospitals for seamen: United States.....	1377, 1378			
New Jersey.....	759				Hours of labor in general employments:				
Ohio.....	899				Arkansas.....		65	350	
United States.....	1377				California.....	131			
Forgery of cards, etc., of labor organizations. (<i>See</i> Labor organizations, using false cards, etc., of.)					Connecticut.....	207			
Forgery of employers' certificates. (<i>See</i> Employers' certificates.)					Florida.....	231			
Foundation for the Promotion of Industrial Peace.....		71	400, 401		Georgia.....	243			
Fraudulent contracts of employees. (<i>See</i> Contracts of employment with intent to defraud.)					Illinois.....	281			
Free public employment offices. (<i>See</i> Employment offices.)					Indiana.....	338			
Freedom to trade. (<i>See</i> Coercion, etc.)					Maine.....	457			
G.					Maryland.....	475			
Garnishment, exemption of wages from. (<i>See</i> Exemption of wages from execution, etc.)					Michigan.....	547, 548			
Garnishment of wages:					Minnesota.....	539			
Arkansas.....	125, 126	65	364		Missouri.....	650			
Utah.....					Montana.....	700			
Virginia.....	1200-1206	59	378		Nebraska.....	722			
Georgia, 1904.....		68	234, 235		New Hampshire.....	738			
	1906.....				New Jersey.....	764, 770			
Goods, etc., of local production preferred for public use. (<i>See</i> Public supplies, etc.)						771			
Government Printing Office. (<i>See</i> Public printing.)					New York.....	803, 804			
Guaranty companies:					Ohio.....	827, 828			
New Mexico.....	783, 784				Pennsylvania.....	907			
					Rhode Island.....	980			
					South Carolina.....	1093			
					Wisconsin.....	1107, 1108			
						1269			
					Hours of labor of children and women. (<i>See</i> Children, etc.)				
					Hours of labor of drug clerks:				
					California.....		62	328	
					New York.....	833			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Hours of labor of employees in bakeries:					Hours of labor of letter carriers:				
New Jersey.....	770, 771	64	904, 905		United States.....	1333			
New York.....	818				Hours of labor of women. (See Women, etc.)				
New York (D).....	57	59	608-700 340-355		Hours of labor on public roads:				
Pennsylvania.....	1041				Arkansas.....	125			
Hours of labor of employees in brickyards:					Illinois.....	291			
New York.....	801, 827				Indiana.....	63	577		
Hours of labor of employees in Government Printing Office:					Iowa.....	368			
United States.....	1332				Missouri.....	603			
Hours of labor of employees in mines, smelters, etc.:					Montana.....	711			
Arizona.....	116, 117				Nebraska.....	722			
Colorado.....	154	62	331		Nevada.....	725, 726			
Idaho.....		72	642		New Mexico.....	788			
Maryland.....	477				New York.....	800, 801			
Missouri.....	632, 653	61	1092, 1093		Oklahoma.....	932			
Montana.....	708, 711	63	555, 586		Oregon.....	945			
Nevada.....	731, 732	72	650		Philippine Islands.....		71	395	
Nevada (D).....		59	334, 335		South Carolina.....	101			
Oklahoma.....		77	412		South Dakota.....	1116			
Oregon.....		78	622		Tennessee.....	1139			
Utah.....	1174				Texas.....	1163			
Wyoming.....	1301, 1312				Wisconsin.....	1267			
Hours of labor of employees on railroads:					Wyoming.....	1302			
Arizona.....	117				Hours of labor on public works:				
Arizona (D).....		60	694, 695		California.....	129, 139	62	329, 330	
Arkansas.....	128, 129	73	1045		Colorado.....	153			
Colorado.....	188				Colorado (D).....	172			
Connecticut.....		73	1054		Delaware.....	223, 224			
Florida.....	233				District of Columbia.....	225, 226			
Georgia.....	241				Hawaii.....	258	74	261	
Indiana.....	363	63	577		Idaho.....	258, 264			
Iowa.....		74	275		Indiana.....	338			
Kansas.....		61	1082, 1083		Kansas.....	390			
Michigan.....	548	74	280		Maryland.....	486, 490			
Minnesota.....	606, 625	76	1022		Massachusetts.....	515, 516	70	773	
Missouri.....	626	61	1089		Minnesota.....	624, 625	75	651	
Montana.....		72	1029		Montana.....	713	63	585, 586	
Montana (D).....		77	382-384		Nebraska.....	725	72	650	
Nebraska.....	722				Nevada.....	732	63	586	
Nevada.....		76	1035, 1036		New York.....	803, 845	64	905	
New York.....	804, 828	77	408, 409		Oklahoma.....		69	470	
North Carolina.....		77	409, 410		Oregon.....		77	412	
North Dakota.....		77	411, 412		Pennsylvania.....	1068, 1069	78	623	
Ohio.....	898				Porto Rico.....	1679	59	385	
Oregon.....		78	621		Utah.....	1173, 1174			
South Dakota.....		78	631		Washington.....	1231, 1239			
Texas.....	1109	79	971, 972, 974		West Virginia.....	1257			
Washington.....		79	981, 982		Wyoming.....	1301			
West Virginia.....		79	988		United States.....	1331, 1385			
Wisconsin.....		79	1001-1003		United States (D).....	70	714-717		
United States.....		71	401, 402						
Hours of labor of employees on street railways:					I.				
California.....	131				Idaho, 1907.....		72	642-644	
Louisiana.....	442, 443				Illinois, 1905.....		61	1075-1080	
Maryland.....	493				1907.....		74	262-266	
Massachusetts.....	516	70	772		Illiterate employees on railroads. (See Railroads, illiterate employees on.)				
New Jersey.....	755				Immigration:				
New York.....	804, 827				Delaware.....		76	1021	
Pennsylvania.....	1033				United States.....	1387-1392	57	720	
Rhode Island.....	1097				(See also Alien contract labor.)		71	397-399	
South Carolina.....	1108				Importing workmen from outside the State:				
Washington.....	1223				Oregon.....	951			

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Inclosed platforms. (See Protection of employees on street railways.)				Injuries, personal, right of action for:			
Incorporation of labor organizations, etc. (See Labor organiza- tions, etc.)				Arizona.....	114		
Indiana, 1905.....	63	569-577		Connecticut.....	195		
1907.....	74	266-275		Delaware.....	220		
Industrial Peace, Foun- dation for the Pro- motion of:				Florida.....	239		
United States.....	71	400, 401		Georgia.....	245		
Injured employees, pub- lic:				Hawaii.....	74	261	
Philippine Islands.....	71	394		Illinois.....	289		
United States.....	77	415, 416		Indiana.....	324		
Injuries causing death, right of action for:				Iowa.....	380		
Alabama.....	97, 99			Louisiana.....	443, 444		
Alabama (D).....	58	995-998		Massachusetts.....	525		
Arizona.....	113, 114			Michigan.....	567		
California.....	143			Missouri.....	76	1027	
Colorado.....	157, 158			Montana.....	701, 702		
Connecticut.....	213			Nevada.....	63	588	
Delaware.....	215			New Jersey.....	766		
District of Columbia.....	226			New Mexico.....	789-791	77	416
Georgia.....	245			Pennsylvania.....	1047		
Idaho.....	271			South Carolina.....	1101, 1103	65	360
Illinois.....	287, 288			Tennessee.....	1129		
Indiana.....	323, 324			Texas.....	1162, 1165	79	974
Kentucky.....	417			Wyoming.....	1300, 1301		
Maine.....	457			Injuries to employees, liability of employers for. (See Liability of employers.)			
Maryland.....	471			Inspection, etc., of bak- eries:			
Massachusetts.....	526			Connecticut.....	197, 198	73	820, 821
Michigan.....	554-556			Indiana.....	332, 333	73	836, 837
Minnesota.....	561			Massachusetts.....	500	73	862
Mississippi.....	627, 628			Minnesota.....	613-615	73	884
Missouri.....	638, 639	61	1090, 1091	Missouri.....	665, 666	73	894, 895
Montana.....	701, 702			New Jersey.....	762	73	911, 912
Nebraska.....	716			New York.....	770-772		
Nevada.....	728	63	588	818, 819	73	923, 924	
New Hampshire.....	738			Ohio.....	828	73	935, 936
New Jersey.....	751, 752			Pennsylvania.....	909, 910	73	951, 952
New Mexico.....	787			Tennessee.....	1041-1043	73	956
New York.....	791, 798			Texas.....	1240, 1241	73	965
North Carolina.....	850			Washington.....	1240, 1241	73	968, 969
North Dakota.....	870, 871			Wisconsin.....	1295-1297	73	980-982
Ohio.....	921, 922			Inspection of factories and workshops:			
Oklahoma.....	935	77	413	Alabama.....	78	817, 818	
Oregon.....	1077, 1078			California.....	143, 144	73	818, 819
Rhode Island.....	1063			Connecticut.....	202-204	73	822-825
South Carolina.....	1101, 1106			Delaware.....	218-220	73	826, 827
South Carolina (D).....	1107			District of Columbia.....	227-229	73	828, 829
South Dakota.....	1123	69	450, 451	Georgia.....	264	73	830
Tennessee.....	1128, 1156			Hawaii.....	256, 257	73	830
Texas.....	1156, 1161			Illinois.....	284-286		
Utah.....	1162, 1163			Indiana.....	293, 294	73	831-836
Virginia.....	1173, 1178			Indiana (D).....	344-349	73	837-841
Virginia (D).....	1201	69	442-444	Iowa.....	371, 381	65	342-344
Washington.....	1226			Kansas.....	382	73	843-846
West Virginia.....	1243			Kansas (D).....	409, 414	73	848-850
Wisconsin.....	1276, 1277			Kentucky.....	415	73	1013-1015
Wisconsin (D).....	1300, 1301	64	891	Louisiana.....	428, 429	73	851-853
Wyoming.....	1314			Maine.....	450	73	854
Injuries, personal, ac- tions for, to be brought within Ter- ritory:				Maryland.....	466-468	73	855-857
New Mexico.....	789-791			Maryland (D).....	496, 494	73	857, 858
				Massachusetts.....	505-510	58	891, 892
				Michigan.....	521-523	73	999-1002
				Minnesota.....	538		
				546, 547			
				567, 568			
				572-576			
				579			
				581-583			
				590-594			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Inspection of factories and workshops—Con.					Inspection of steam vessels—Concluded.				
Mississippi.....	630, 631	73	890		New Jersey.....	767-769	70	774-776	
Missouri.....	646-649	73	890-896		New York.....	830-832			
Montana.....	662, 663				Pennsylvania.....	1064-1067			
Nebraska.....	666-668				Washington.....		79	962-964	
Nevada.....	687				United States.....	1336-1343	60	718-720	
New Jersey.....	718	73	903			1387	68	237	
New York.....	732	73	904		Inspectors, factory:				
North Dakota.....	761-765	73	904-911		Alabama.....		73	817, 818	
Ohio.....	810-818	73	913-925		California.....	144	73	818, 819	
Oregon.....	827, 828	73	927		Connecticut.....	202, 212	73	822-825	
Pennsylvania.....	889-895	73	928-940		Delaware.....	219, 220	73	827	
Rhode Island.....	904				Illinois.....	285, 286	73	835, 836	
South Dakota.....	910-914	73	942-945		Indiana.....	348, 349	73	840, 841	
Tennessee.....	952	73	946, 947		Iowa.....		73	843-846	
Texas.....	973-975	73	954-958		Kansas.....	409	73	848, 849	
Utah.....	1043-1046	73	958-964		Kentucky.....	428, 429	73	851, 853	
Washington.....	1058, 1059	73	964		Louisiana.....		73	854	
Washington (D.).....	1083-1086	73	965		Maine.....	453	73	856, 857	
West Virginia.....	1089, 1090	73	969-972		Maryland.....	468	73	858	
Wisconsin.....	1117	73	973, 974		Massachusetts.....	505, 506	73	862-869	
	1213, 1223	73	980-992		Michigan.....	528, 529	75	863	
	1224, 1238	79	990-992		Minnesota.....	574, 575	73	880-882	
	1239	58	321, 322			581-583	73	888-890	
		82	381, 382		Missouri.....	646-649	73	890	
		71	973, 974			673, 674		892-894	
		73			Nebraska.....		73	902-904	
		71			New Jersey.....	753, 754	73	910, 911	
		73				781, 782			
		73			New York.....	802	73	913-923	
		73			Ohio.....	889-892	73	928-931	
		73			Oregon.....		73	935, 936	
		73			Pennsylvania.....	973-975	73	940-945	
		73				1046		945, 947	
		73			Rhode Island.....	1084-1086	73	957, 958	
		73			Tennessee.....	1132, 1138	73	958-959	
		73				1139	73	964, 95	
		73			Washington.....	1234-1236	73	966-969	
		73			West Virginia.....	1254, 1255	73	972, 973	
		73			Wisconsin.....	1265, 1282	73	975-977	
		73				1293			
(See also Fire escapes; Inspection, etc., of bakeries; Inspectors, factory; Laundries; Seats for female employees; Sweating system.)					Inspectors, mine:				
Inspection, etc., of mines. (See Mine regulations.)					Alabama.....	99-105			
Inspection of steam boilers:					Arkansas.....	122-124	65	352, 353	
Colorado.....	165-167	73	819, 820		Colorado.....	162-164	73	1046-1048	
Connecticut.....	210, 211	73	824			174, 175			
Florida.....	238				Idaho.....	259-262			
Indiana.....	366, 367	73	843		Illinois.....	301-306	61	1076	
Iowa.....	383	73	847				73	574-576	
Maine.....	449, 450	73	855		Indiana.....	352, 353	73	272, 273	
Maryland.....	490-492	73	859-861		Iowa.....	373-375			
Massachusetts.....	510, 511	73	872-876		Kansas.....	395, 396	74	279-281	
Michigan.....	569	73	878			404, 405			
Minnesota.....	583-588	73	886, 887		Kentucky.....	422, 426	70	761-763	
Montana.....	681-684	73	900-902		Maine.....	453			
	706				Maryland.....	478-480			
New York.....	815, 816	73	918			488			
	842, 843	77	926, 927		Michigan.....	549, 550	73	578	
		73	402-404			565, 566	63	582-584	
Ohio.....	895, 896	73	939, 940		Minnesota.....				
	914				Missouri.....	658-660			
Pennsylvania.....	1031, 1032	73	956			684-686			
	1045, 1046	73	966		Montana.....	708, 709	72	600-602	
Vermont.....	1197	73							
Inspection of steam boilers in mines. (See Mine regulations.)					New Jersey.....	754, 755			
Inspection of steam vessels:					New York.....	819-821			
Indiana.....	362, 363				North Carolina.....	854-858	77	410, 411	
Maine.....	456				North Dakota.....		77	412	
Minnesota.....	584, 585				Ohio.....	877-879			
New Hampshire.....	736, 737	63	590, 591		Oklahoma.....				

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Inspectors, mine—Con.					Intimidation—Conc'd.				
Utah.....	1185				Connecticut (D).....		(57	681-684	
Washington.....	{1213, 1214						67	884-886	
West Virginia.....	{1234-1236	67	912, 913				70	732-734	
Wyoming.....	{1300, 1301						78	506, 507	
United States.....	{1315-1318				Illinois.....	280, 281			
Inspectors, railroad:	1381				Louisiana.....	437			
Illinois.....		61	1078		Maine.....	458, 459			
Massachusetts.....	532				Massachusetts.....	514			
Michigan.....	544				Michigan.....	562			
Ohio.....	900, 901				Mississippi.....	632			
Washington.....	1234-1236	79	986		Missouri.....	636			
Insulation of poles for					New Hampshire.....	739			
electric wires:					New York.....	{795-797			
Massachusetts.....	533					800			
Insurance, accident:					North Dakota.....	873, 874			
Illinois.....		61	1075, 1076		Oklahoma.....	930, 931			
Michigan.....	560, 561				Oregon.....	989			
South Carolina.....	1112				Porto Rico.....	1079			
Insurance, cooperative:					Rhode Island.....	1094			
Maryland.....	{461-463				South Dakota.....	1125, 1126			
	{477, 478				Texas.....	1164			
Maryland (D).....		57	689, 690		Utah.....		65	364	
Intelligence offices.					Vermont.....	1198			
(See Employment of					Washington.....	1219, 1220			
ices.)					West Virginia.....		79	996	
Intemperate employees					(See also Interfer-				
on public carriers:					ence with em-				
Illinois.....	314				ployment, and				
Michigan.....	542, 554				cross references.)				
Missouri.....	635, 636				Intoxicating liquor.				
Nebraska.....	722				(See Liquor.)				
New Jersey.....	767				Intoxication, etc., in or				
New York.....	801, 830				about mines or smelt-				
North Dakota.....	864, 865				ers.				
Ohio.....	898				Wyoming.....		61	1095	
Vermont.....	1197	71	396		Intoxication of em-				
Wisconsin.....	1267				ployees:				
(See also Intoxica-					Arizona.....	116			
tion, etc.)					Arkansas.....	124			
Interference with em-					California.....	138			
ployment:					Connecticut.....	196			
Alabama.....	108, 109				Florida.....	232			
Arkansas.....	119				Idaho.....	273			
Delaware.....	216, 217				Indiana.....		74	275	
Georgia.....	{246, 247				Maine.....	455			
	{251				Michigan.....	554			
Illinois.....	291				Minnesota.....	602			
Illinois (D).....		63	553-558		Mississippi.....	630			
Kansas.....	387, 388				Missouri.....	635, 636			
Kentucky.....	420				Montana.....	706			
Louisiana.....	440	70	765		Nebraska.....	716			
Minnesota.....	603				Nevada.....	726			
New Jersey.....	782				New Jersey.....	766			
New York.....	838				New Mexico.....	788			
North Dakota.....	861, 862				New York.....	838			
Pennsylvania.....	{970, 971				North Carolina.....	851	77	409	
	{1036, 1037				North Dakota.....	873			
Rhode Island.....	1094				Oklahoma.....	930			
Utah.....	1172	79	979		Porto Rico.....	1081			
West Virginia.....	1251				South Dakota.....	1125			
Wisconsin.....	1279, 1280				Utah.....	1180			
Wisconsin (D).....		(57	678-680		Vermont.....	1197	71	396	
		70	734-743		West Virginia.....	1243			
(See also Blacklist-					Wyoming.....		61	1095	
ing; Boycotting;					(See also Intem-				
Conspiracy					perate employees.)				
against working-					Iowa, 1904.....		60	712, 713	
men; Enticing							68	235, 236	
employees; In-							74	275-278	
timidation; Pro-					J.				
tection of em-					Judgments for wages.				
ployees.)					(See Suits for wages.)				
Intimidation:					K.				
Alabama.....	{103, 109				Kansas, 1905.....		61	1080-1084	
	{111						74	275-281	
Connecticut.....	196								

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page	No.	Page.		Page.	No.	Page.
Kentucky, 1906.....		70	760-763	Labor organizations, in- corporation, regula- tion, etc., of—Cont'd.			
Knights of Labor:							
Nebraska.....	716			Pennsylvania.....	{ 970, 971 1034-1037 1043 }		
Wyoming.....	1313, 1314			Pennsylvania (D).....	1079	61	1064, 1065
L.				Porto Rico.....	1160, 1167		
Labels, false, on manu- factured articles:				Texas.....	1313, 1314		
California.....	138			Wyoming.....	{ 1373, 1376 1377 }		
Labels. (See Trade- marks.)				United States.....			
Labor agents. (See Employment offices.)				Labor organizations, pro- tection of em- ployees as members of. (See Protection of employees as mem- bers of labor organiza- tions.)			
Labor agreements not conspiracy. (See Conspiracy, labor agreements not.)				Labor organizations, using false cards, etc., of:			
Labor and industry, society of:				Georgia.....	250		
Kansas.....	407-410			Massachusetts.....	537		
Labor, bureau of. (See Bureau of labor, etc.)				New York.....	829		
Labor commission:				Pennsylvania.....	1043		
Hawaii.....	{ 254, 255 263, 264 266-270 }			Wisconsin.....	1284, 1285		
Idaho.....	{ 334-337 }			Labor organizations. (See Antitrust act; Conspiracy, labor agreements not; Trade-marks of trade unions.)			
Indiana.....				Labor, Sunday. (See Sunday labor.)			
Labor, commissioner of. (See Bureau of labor, etc.)				Laborers, alien. (See Alien laborers.)			
Labor contracts. (See Contracts of employ- ment.)				Laborers, exemption of, from license tax. (See License tax.)			
Labor Day:				Laborers' lodging houses. (See Lodging houses.)			
Mississippi.....		57	712	Laborers. (See Em- ployees.)			
(See also Holidays, etc.)				Laundries, regulation of:			
Labor, employment of. (See Employment of labor.)				Hawaii.....	256, 257	73	830
Labor law, violations of:				New York.....	816	73	918
New York.....		77	407, 408	Leave of absence for employees in public service:			
Labor, etc., local or special laws regulat- ing. (See Local or special laws, etc.)				District of Columbia.....		77	396
Labor organizations, bribery of representa- tives of:				North Carolina.....	858		
New York.....		57	718	United States.....	{ 1322 1332-1334 }		
Labor organizations ex- cluding members of national guard:				Letter carriers, hours of labor of:			
New York.....	798			United States.....	1333		
Labor organizations, in- corporation, regula- tion, etc., of:				Letters of recommenda- tion. (See Employ- ers' certificates.)			
Colorado.....	157			Liability of corpora- tions for debts of con- tractors for labor. (See Liability of railroad companies for debts, etc.)			
Connecticut.....		73	1051	Liability of employees for negligence. (See Negligence.)			
Georgia.....	250			Liability of employers for injuries to employ- ees:			
Iowa.....	368			Alabama.....	98, 99		
Kansas.....	390			Arizona.....	113		
Louisiana.....	434, 435			Arizona (D).....		60	694, 695
Maryland.....	461			Arkansas.....	125, 129	73	1043, 1044
Massachusetts.....	{ 515, 533 534, 537 550, 557 }	57	710	California.....	132, 133	72	640, 641
Michigan.....	{ 559, 560 563 603 }						
Minnesota.....	631						
Mississippi.....							
Montana.....		72	647				
Nebraska.....	716						
New Hampshire.....		68	589				
New Jersey.....	{ 748, 749 790 }						
New York.....	791, 798						
Ohio.....	877						

	Bulletin.				Bulletin.		
	Tenth special.	No.	Page.		Tenth special.	No.	Page.
	Page.	No.	Page.		Page.	No.	Page.
Liability of employers for injuries to employees—Continued.				Liability of employers for injuries to employees—Concluded.			
Colorado.....	171, 172 188			Wisconsin.....	1274, 1275	79	1001, 1002
Colorado (D).....	68		187, 188	Wisconsin (D).....		58	986-988
Connecticut.....	208		1015-1019	United States.....		64	909
Dist. Columbia (D).....		78	582-584			77	413, 414
Florida.....	232					68	188-197
Florida (D).....		77	372-377			70	717-728
Georgia.....	241-213 245			United States (D).....		71	385-389
Illinois.....	313, 314	61	1075, 1076			72	610, 611
Illinois (D).....		69	444-446			74	216-239
		71	382-385			77	378-381
Indiana.....	321, 331 342 344			(See also Employ- ment of labor; Fellow-servants; Injuries, etc.; Insurance, coop- erative.)		78	582-584
Indiana (D).....		58	988, 989	Liability of employers			
Iowa.....	368 370	74	377-380	for taxes of employees:			
Iowa (D).....		61	1061-1064	Georgia.....	239		
		63	547-549	Idaho.....	270, 271		
Kansas.....	405, 406	61	1082	Idaho.....	448, 449		
		74	63, 64	Louisiana.....			
Kansas (D).....		69	452, 453	Nevada.....	728		
Kentucky (D).....		73	1013-1015	Pennsylvania.....	1068		
		64	883-887	Liability of railroad			
Maryland.....	461-465 477, 478			companies for debts of			
				contractors for labor:			
Massachusetts.....	525 527	70	769	Connecticut.....	199		
Massachusetts (D).....	532	76	986, 987	Kansas.....	406		
Michigan.....	554 556			Louisiana.....	432		
Minnesota.....	595, 612 615			Maine.....	455		
Minnesota (D).....		64	882, 883	Massachusetts.....	530		
Mississippi.....	627			Minnesota.....	595, 596		
Mississippi (D).....		69	446-449	Missouri.....	634		
Missouri.....	639, 640	61	1090, 1091	New Jersey.....	766		
Montana.....	698, 712	63	585	New York.....	833, 834		
New Mexico.....	787, 788			North Carolina.....	850, 851		
New York.....	845-847	69	471	Vermont.....	1196		
		61	1055, 1056	Wisconsin.....	1274		
			1059-1061	(See also Liability			
New York (D).....		71	371 373	of stockholders;			
		76	987-989	Protection of			
North Carolina.....	858			wages.)			
North Carolina (D).....		63	549, 550	Liability of railroad			
		70	717	companies for injuries			
North Dakota.....	866, 867			to employees. (See			
	877			Liability of employ- ers.)			
Ohio.....	839, 909 926	59	384	Liability of railroad			
		56	297-299	companies for wages			
Ohio (D).....		57	690 693	due from predecessors:			
		65	337	Wisconsin.....	1274		
Oklahoma.....		67	868-875	Liability of railroad			
Oregon.....	947	77	413	companies to work- men not employees:			
Philippine Islands.....				Pennsylvania.....	1032, 1033	78	629, 630
Porto Rico.....	1077-1079			Pennsylvania (D).....		70	743-746
South Carolina.....	1101, 1112			Liability of stock-			
South Carolina (D).....		69	450, 451	holders of corpora- tions for wage debts:			
South Dakota.....	1119	77	396-398	Indiana.....	330		
		65	334 337	Massachusetts.....	538		
Tennessee (D).....		73	1020, 1021	Michigan.....	539, 559		
Texas.....	1166, 1167	65	363	New Jersey.....	752, 757		
		60	692 694		837, 840		
		61	1056-1058	New York.....	841		
Texas (D).....		63	551	North Carolina.....	850		
		65	338, 339	North Dakota.....	866		
		71	367 371	Oklahoma.....	930		
Virginia.....	1109, 1200 1208, 1209			Pennsylvania.....	969, 970		
		58	985, 986	South Dakota.....	980, 1029		
Virginia (D).....		63	412-444	Tennessee.....	1119		
Washington (D).....		53	990 992	Tennessee.....	1127		
West Virginia (D).....		71	381, 382	Wisconsin.....	1272, 1273		
		72	608-610	(See also Liability			
				of railroad com- panies for debts, etc.)			

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
License tax, exemption of mechanics, etc., from:					Massachusetts, 1904.....		57	708-711	
Iowa.....	368				" 1905.....		61	1085-1089	
Louisiana.....	432	57	703		" 1906.....		70	768-774	
Massachusetts.....	499				" 1907.....		75	651-654	
Michigan.....	545				Master and servant. (See Employment of labor; Liability of employers, and cross references under each.)				
New Hampshire.....	742				Meals, time for. (See Time for meals.)				
North Carolina.....	860				Mechanics, exemption of, from license tax. (See License tax.)				
Pennsylvania.....	1060				Mechanics, exemption of, from manufacturers' taxes:				
Licensing, etc. (See Examination, etc.)					Philippine Islands.....		53	385	
Liens, digest of laws relating to.....	51-92				Mechanics' liens, digest of laws relating to.....	51-92			
Liquor, sale of, to employees:					Mediation. (See Arbitration.)				
Hawaii.....		62	334, 335		Medical attendance for employees in smelting works:				
Iowa.....	370	74	262		New Mexico.....	784			
Massachusetts.....	502				Michigan, 1905.....		63	577-581	
New Hampshire.....		63	589, 590		" 1907.....		75	654-656	
Ohio.....	905				Mine employees, associations of:				
South Dakota.....	1117				Kansas.....	403-405			
Vermont.....	1198, 1199	60	715		Michigan.....	559, 560			
Local or special laws regulating labor, etc.:					Mine explosions, investigation of:				
Kentucky.....	416				United States.....		77	414	
Louisiana.....	432				Mine inspectors. (See Inspectors, mine.)				
Pennsylvania.....	965				Mine regulations:				
Texas.....	1156				Alabama.....	99-105			
Virginia.....	1199				Arizona.....	106, 109	72	639-640	
Locomotive boilers, inspection of:					Arkansas.....	120-124	65	352-354	
New York.....		64	907		California.....	142, 143			
Locomotives, etc., abandonment of. (See Abandonment.)		77	402-404		Colorado.....	145, 146			
Lodging houses, laborers:					" 158-165				
Connecticut.....	208				" 174-177		73	1046-1048	
Hawaii.....	256				" 191-194				
Lodging houses, sailors:					" 259, 262				
New York.....	839, 840				Idaho.....	273			
Oregon.....	853-855				" 275, 289				
South Carolina.....	1103, 1104				" 333, 334		61	1076-1078	
United States.....	1111	57	719		" 349-358		74	265, 266	
(See also Seamen.)	1365				Illinois.....	322, 323	67	886-868	
Louisiana, 1904.....		57	702, 703		" 68		68	214-216	
" 1906.....		70	763-765		Illinois (D).....		69	444-446	
Lunch, time for. (See Time for meals.)					" 71		71	382-385	
M.									
Mail, obstructing:					Indiana.....	326-327	63	569-577	
United States.....	1333				" 333, 334		74	269-273	
Mail service, ocean, American vessels and crews for:					Indiana (D).....	349-358	67	864-866	
United States.....	1334				Iowa.....	373-379	74	277	
Maine, 1905.....		61	1084, 1085		Kansas.....	393-403	61	1080-1082	
" 1907.....		72	644-646		Kentucky.....	422-426	70	761-763	
Manufactured articles, marking:					Kentucky (D).....		64	883-887	
California.....		62	330		Maryland.....	478-486			
Manufactures, Bureau of:					" 549, 550				
United States.....	1386				Michigan.....	565, 566	63	578-580	
Marriage, etc., statistics of, to be procured:					" 651-662		61	1033	
California.....		62	323		Missouri.....	677-680	76	1029, 1030	
Married women, earnings of. (See Earnings of married women.)					" 684-686				
Maryland, 1904.....		57	704-708		" 691-696		72	650-652	
" 1906.....		70	765-768		" 706-712				
					Nevada.....	725	63	587	
					New Jersey.....	754, 755			
					" 762				
					New Mexico.....	784-786			
					New York.....	819-821	69	468, 470	
							77	404, 405	

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Mine regulations—Con.				N.			
North Carolina.....	834-858			Names of employees to be furnished. (See Employers to furnish names, etc.)			
North Dakota.....		77	410, 411	National guard, mem- bers of, not to be ex- cluded from labor or- ganizations:			
Ohio.....	877-885	59	379	New York.....	798		
Ohio (D).....	923, 924	70	779	National guard, pro- tection of employees as members of. (See Protection of em- ployees as members of national guard.)			
Oklahoma.....		65	337	National trade unions:			
Oregon.....	944, 945	77	412	United States.....	{1373, 1376		
Pennsylvania.....	981-1029			Nebraska, 1905.....	1377	63	586
Pennsylvania (D).....	1052-1055	78	629	1907.....		76	1030-1032
South Dakota.....	1114, 1117	62	318, 319	Negligence of drivers of public carriages:			
Tennessee.....	1126, 1127			Massachusetts.....	536		
Tennessee.....	1129	79	968-970	Negligence of em- ployees in salt works:			
Tennessee (D).....	1138-1155	65	334-337	New York.....	838, 839		
Texas.....	1170	73	1020, 1021	Negligence of em- ployees on railroads, etc.:			
Utah.....	1185-1192	79	976-979	Alabama.....	107		
Washington.....	1213-1222	67	912, 913	Arizona.....	116		
West Virginia.....	1263	79	988-998	Connecticut.....	196		
West Virginia (D).....		72	608-610	Georgia.....	246		
Wyoming.....	1300, 1301			Idaho.....	273		
Wyoming (D).....	1306-1313	61	1095	Illinois.....	280		
United States.....	1316-1321	71	389-391	Maine.....	456, 458		
(See also Accidents in mines; Inspect- ors, mine; Weigh- ing coal.)	1381-1383			Massachusetts.....	459		
Miners, examination, etc., of. (See Exami- nation, etc.)				Michigan.....	532		
Miners' Home:				Minnesota.....	554		
Pennsylvania.....	1047-1049			Mississippi.....	603		
Miners' Hospital:				Missouri.....	630		
California.....	143			Montana.....	635		
New Mexico.....	788, 789			New Jersey.....	706		
Utah.....	1177, 1178			New York.....	768, 782		
West Virginia.....	1256, 1257			North Dakota.....	801, 840		
Wyoming.....	1302			Oklahoma.....	873		
Mines, accidents in. (See Accidents in mines.)				Pennsylvania.....	930		
Mines, bureau of. (See Bureau of mines.)				Porto Rico.....	972		
Mines, department of. (See Bureau of mines.)				South Carolina.....	1080		
Mines, etc., hours of labor in. (See Hours of labor, etc.)				South Dakota.....	1110		
Mines, etc., intoxica- tion in or about:				Utah.....	1125		
Wyoming.....		61	1095	Vermont.....	1180		
Mines, inspection of. (See Mine regula- tions.)				Negligence of em- ployees on steam- boats, etc.:	1197		
Mines, inspectors of. (See Inspectors, mine.)				Alabama.....	107		
Mines, weighing coal at. (See Weighing coal at mines.)				Kansas.....	386, 387		
Minnesota, 1905.....		63	581, 585	Maine.....	458		
1907.....		76	1021-1025	Massachusetts.....	536		
Minors, earnings of. (See Earnings of mi- nors.)				Minnesota.....	602		
Misdemeanors, penalty for:				Mississippi.....	629		
Georgia.....	249			Missouri.....	635, 645		
Utah.....	1179			New York.....	801, 832		
Mississippi, 1904.....		57	712	Oregon.....	936		
Missouri, 1905.....		61	1089-1093	Porto Rico.....	1080		
1907.....		76	1025-1030	South Carolina.....	1107		
Montana, 1907.....		63	585, 586	South Dakota.....	1125		
1907.....		72	646-652	Utah.....	1180		
				Washington.....	1229		
				West Virginia.....	1243		
				United States.....	1380		
				Negligence of em- ployees on street rail- ways:			
				Louisiana.....	435		

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Negligence of operators of steam boilers:				Oyster men:			
Arizona.....	115			Maryland.....	471, 472		
California.....	138			North Carolina.....	861		
Idaho.....	272			P.			
Minnesota.....	601, 602			Payment of wages due			
Montana.....	704-706			deceased employees:			
New York.....	801, 840			Alabama.....	99		
North Dakota.....	873			Georgia.....	250, 251		
Pennsylvania.....	1066			Mississippi.....	632		
Porto Rico.....	1080			Pennsylvania.....	78	628	
South Dakota.....	1125			Payment of wages due			
Negligent fellow-serv- ant to be named in verdict:				discharged employ- ees:			
Minnesota.....	615			Arizona.....	116		
Nevada, 1906.....		63	586-589	Arkansas.....	124		
1907.....		76	1032-1036	Arkansas (D).....		60	690, 700
New Hampshire, 1905.....		63	586-591	Colorado.....	187		
1907.....		76	1036	Kansas.....	386		
New Jersey, 1904.....		58	1012-1019	New Jersey.....	765		
1905.....		64	904, 905	South Carolina.....	1105		
1906.....		70	774-777	Payment of wages in			
1907.....		77	399-402	barrooms:			
New Mexico, 1905.....		61	1093, 1094	California.....	139		
1907.....		72	653	Payment of wages in			
Newsboy law:				scrip:			
Massachusetts.....		73	711, 719	Arizona.....	117		
New York.....		73	765-767	Arkansas.....	127	65	350, 351
New York, 1904.....		57	712-718	Arkansas (D).....		73	1046
1905.....		64	905-907	Colorado.....	186, 187	77	384-386
1906.....		69	458-471	Georgia.....	240		
1907.....		77	402-409	Illinois.....	290		
Night work. (See Chil- dren, night work by; Women, night work by.)				Indiana.....	339, 340	63	576
Nonresidents, employ- ment of, as armed guards. (See Armed guards.)				Iowa.....	352, 365		
North Carolina, 1905.....		64	908	Kansas.....	377, 378		
1907.....		77	408, 410	Louisiana.....	391		
North Dakota, 1907.....		77	410-412	Michigan.....	436		
Notice of intention to terminate employ- ment. (See Employ- ment, termination of, notice of.)				Missouri (D).....	476, 477		
Notice of reduction of wages. (See Wages, reduction of, notice of.)				Montana.....	494		
O.				Nevada.....	548, 549		
Obligations of employ- ers, etc. (See Em- ployment of labor.)				New Jersey.....	750, 760	56	309-311
Obstructing mail:				New Mexico.....	786	63	587
United States.....	1333			New York.....	804	72	653
Ocean mail service, American vessels and crews for:				North Carolina.....	853, 854	69	461, 462
United States.....	1334			Oregon.....		78	623
Offenses. (See Negli- gence.)				Pennsylvania.....	1067, 1068		
Ohio, 1904.....		59	378-384	South Carolina.....	1106, 1109	60	714, 715
1906.....		70	777-779	Tennessee.....	1133, 1136		
Oklahoma, constitution.		77	412, 413	Texas.....	1168, 1169	65	363
Ore, weighing, at mines:				Vermont.....	1199		
Alabama.....	106			Virginia.....	1202		
Oregon, 1905.....		62	258-260	Washington.....	1222	67	911, 912
1907.....		78	621-624	West Virginia.....	1255		
Overtime labor, pay- ment for:				Wisconsin.....	1284		
California.....	131			Payment of wages, modes and times of:			
Michigan.....	547			Arizona.....	116		
New York.....	804			Arkansas.....	127		
Pennsylvania.....	1033			California.....	150, 151		
				Colorado.....	187, 188		
				Connecticut.....	207, 208		
				Hawaii.....	257		
				Illinois.....	295, 322		
				Indiana.....	338-340		

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Payment of wages, modes and times of—Concluded.					Profit sharing by corporations:				
Massachusetts.....	523-525	61	1086, 1087		Connecticut.....	199			
Minnesota.....	597, 598	70	770		Massachusetts.....	529, 530			
Missouri.....	633, 652				Protection of alien laborers. (See Alien laborers.)				
New Hampshire.....	674, 677				Protection of employees as candidates for office:				
New Jersey.....	738				Wyoming.....	1304			
New York.....	760, 761	58	1019		Protection of employees as members of labor organizations:				
Ohio.....	779, 780				California.....	139			
Pennsylvania.....	804, 805	78	629		Colorado.....	180, 181			
Rhode Island.....	827, 828				Connecticut.....	196			
Tennessee.....	925, 926				Idaho.....	273			
Vermont.....	1041	71	396		Indiana.....	326			
Virginia.....	1132, 1133				Kansas.....	414			
West Virginia.....	1202, 1203				Kansas (D).....	56	311		
Wisconsin.....	1256				Massachusetts.....	514			
Wyoming.....	1269				Minnesota.....	612, 613			
Payment of wages of seamen. (See Seamen.)	1312				Nevada.....	733, 734			
Payment of wages, refusal of:					Nevada (D).....	78	591, 592		
Minnesota.....	603				New Jersey.....	756			
(See also Suits for wages.)					New York.....	797, 798			
Peddlers' license. (See License tax.)					New York (D).....	67	888, 889		
Penalty for misdemeanors. (See Misdemeanors.)					Ohio.....	9-8			
Pennsylvania, 1905.....		65	356-360		Oregon.....	9-9			
1906.....		70	780		Pennsylvania.....	1063, 1064			
1907.....		78	624-630		Porto Rico.....	1081			
Pensions for employees of corporations:					Wisconsin.....	1279			
Pennsylvania.....	970				United States.....	1377			
Peonage:					United States (D).....		68	216-221	
Nevada.....	728						72	613-629	
United States.....	1323, 1381	60	695, 696				75	634-663	
United States (D).....		73	1022-1029		Protection of employees as members of national guard:				
Pesthouse, erection of, for employees:					Kansas.....	393			
New Mexico.....	788				New York.....	798			
Philippine Islands, 1904.....		59	385		Washington.....	1213, 1214			
1906.....		71	394, 395		Wisconsin.....		79	1003	
1907.....		78	630		Protection of employees as traders. (See Coercion of employees.)				
Picketing:					Protection of employees as voters:				
Alabama.....	111				Alabama.....	112			
Colorado.....		62	330		Arizona.....	114, 115			
(See also Interference with employment.)					Arkansas.....	118			
Plumbers, examination, etc., of. (See Examination, etc.)					California.....	137			
Police officers. (See Armed guards.)					Colorado.....	168			
Policemen, employment of, as laborers:					Connecticut.....	197			
Maryland.....	492, 493				Delaware.....	214			
Poll tax of employees, liability of employers for. (See Liability of employers for taxes of employees.)		59	385		Florida.....	237, 238			
Porto Rico, 1904.....					Idaho.....	272			
Powers of corporations, restriction of:					Indiana.....	327			
Pennsylvania.....	981, 1030				Iowa.....	368			
Preference of wages. (See Wages as preferred claims.)					Kansas.....	388			
Printing, public. (See Public printing.)					Kentucky.....	427, 428			
					Louisiana.....	435			
					Maryland.....	469			
					Massachusetts.....	497			
					Michigan.....	563			
					Minnesota.....	580, 581			
						605, 606			
					Mississippi.....	626			
					Missouri.....	649, 650			
					Montana.....	703, 704			
					Nevada.....	733			
					New Jersey.....	778, 779	70	776, 777	
					New Mexico.....	783			
					New York.....	800			
					North Carolina.....	860			
					Ohio.....	896, 897			
					Oregon.....	938, 939			
					Pennsylvania.....	970			
					Philippine Islands.....		78	630	
					Porto Rico.....	1077, 1080			
					South Carolina.....	1107			

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Protection of employees as voters—Concluded.				Protection of wages— Concluded.			
South Dakota.....	1124			Maryland.....	492		
Tennessee.....	1127, 1130			Massachusetts.....	497, 498	57	711
Utah.....	1134			Michigan.....	544, 545		
West Virginia.....	1173, 1174			Minnesota.....	562		
Wisconsin.....	1242			Missouri.....	616, 617		
Wyoming.....	1288			Nebraska.....	621		
(See also Time to vote.)	1201			New Jersey.....	635, 646		
Protection of employees of electric companies:				New York.....	649		
Massachusetts.....	523			North Carolina.....	720, 721		
Protection of employees on buildings:				North Dakota.....	757		
California.....	136, 141			Oregon.....	792, 829		
Connecticut.....		73	1052, 1053	South Carolina.....	830		
Illinois.....		74	262-265	Tennessee.....	852, 853		
Indiana.....	263, 364			Texas.....	877		
Kansas.....		61	1083, 1084	Vermont.....	955		
Maryland.....	470, 471			Virginia.....	1109		
Massachusetts.....	509			Washington.....	1137		
Minnesota.....	636			Wisconsin.....	1156		
Missouri.....	648			United States.....	1196		
New York.....	806-808			United States (D.).....	1205		
New York (D.).....	827			(See also Exemption of wages; Forced contributions; Li- ability of railroad companies for debts of contract- ors for labor; Li- ability of stock- holders of corpo- rations for wage debts; Wages as preferred claims.)	1227, 1228		
Ohio.....	904, 905				1287		
Pennsylvania.....	900				1331, 1332	66	717, 718
Wisconsin.....	1291, 1292	67	915, 916			79	950-958
Protection of employees on street railways:							
Colorado.....	186, 199						
Connecticut.....	206, 201						
District of Columbia.....		60	718				
Illinois.....	323						
Indiana.....	321						
Iowa.....	367						
Kansas.....	406						
Louisiana.....		57	703, 704				
Maine.....		61	1084, 1085				
Massachusetts.....	522, 533	70	772				
Michigan.....	551, 552						
Minnesota.....	596, 597						
Missouri.....	638						
Montana.....		72	648, 649				
Nebraska.....	721						
New Hampshire.....	743, 744						
New Jersey.....	773						
New York.....	836, 837	64	906, 907				
North Carolina.....	860						
Ohio.....	902						
Oregon.....	940, 941	70	777				
South Carolina.....	1106	60	714				
Tennessee.....	1139						
Texas.....	1172						
Utah.....	1181, 1182						
Virginia.....	1206						
Washington.....	1223						
West Virginia.....	1259, 1260						
Wisconsin.....	1275						
Protection of employees. (See Fire escapes on factories; Guards on threshing machines; Inspection of factories, etc.; Mine regulations; Railroads, safety ap- pliances on.)							
Protection of wages:							
California.....	132, 139						
Colorado.....	149, 150						
Connecticut.....	182, 183						
District of Columbia.....	199						
Georgia.....	230						
Idaho.....	242						
Indiana.....	260, 274						
Kansas.....	329-332						
Louisiana.....	405						
	432, 441						

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Public works, employment of aliens on. (<i>See</i> Aliens, employment of, etc.)				Railroad employees, forced contributions from. (<i>See</i> Forced contributions.)			
Public works, hours of labor on. (<i>See</i> Hours of labor.)				Railroad employees, hours of labor of. (<i>See</i> Hours of labor, etc.)			
Public works, injuries of employees on:				Railroad employees, influencing, not to wear uniforms: New York.....	838		
Philippine Islands.....		71	394	Railroad employees, etc., intoxication of. (<i>See</i> Intoxication.)			
Public works, labor on:				Railroad employees, negligence of. (<i>See</i> Negligence, etc.)			
New York.....		64	905	Railroad employees, protection of. (<i>See</i> Railroads, safety appliances on.)			
New York.....		69	470	Railroad employees, qualifications of. (<i>See</i> Examination, etc., of railroad employees.)			
Public works, preference of domestic materials for:				Railroad employees, rules for. (<i>See</i> Rules, etc.)			
Minnesota.....	615			Railroad employees, strikes of. (<i>See</i> Strikes, etc.)			
Missouri.....	670, 671			Railroad employees to be paid when discharged. (<i>See</i> Payment of wages due discharged employees.)			
Missouri (D).....	60	697-699		Railroad employees, voting by: Kansas.....	380		
New Mexico.....	61	1094		Railroad inspectors. (<i>See</i> Inspectors, railroad.)			
United States.....	1330			Railroad relief societies. (<i>See</i> Benefit societies.)			
Public works, preference of resident laborers on:				Railroad trains, sufficient crew required on:			
Louisiana.....	446, 447			Arizona.....	117		
Massachusetts.....		57	708	Arkansas.....		73	1044
New Mexico.....		61	1094	Connecticut.....	200		
New York.....	805, 806			Indiana.....		74	206, 267
Porto Rico.....	1079			Maine.....	465		
(<i>See also</i> Aliens, employment of.)				North Dakota.....	866		
Public works, rates of wages of employees on. (<i>See</i> Rates of wages, etc.)				Ohio.....	926, 927-929		
Public works, retention of wages of employees on:				South Carolina.....	1102		
California.....		62	330	Texas.....	1162	79	971
Public works, vaccination of employees on:				Wisconsin.....		79	1901
Virginia.....		60	717	Railroads, accidents on. (<i>See</i> Accidents.)			
R.				Railroads, competent men to be employed on. (<i>See</i> Examination, etc., of railroad employees; Railroads, illiterate employees on.)			
Railroad bridges, etc.: Vermont.....		60	715	Railroads, construction of caboose cars on: Montana.....		72	648
Railroad cars, refusal to move. (<i>See</i> Strikes of railroad employees.)				Railroads, height of bridges, etc., over: Arkansas.....		65	351
Railroad companies, liability of, for debts of contractors for labor. (<i>See</i> Liability of railroad companies.)				Connecticut.....	197		
Railroad companies, liability of, for injuries to employees. (<i>See</i> Liability of employers.)				Idaho.....		72	644
Railroad companies, liability of, to workmen not employees: Pennsylvania.....	1032, 1033			Iowa.....		74	276
Railroad employees, complaints by: Massachusetts.....		530		Kansas.....		61	1063
Railroad employees, disobedience of. (<i>See</i> Negligence, etc.)				Kentucky.....	420		
Railroad employees, examination, etc., of. (<i>See</i> Examination, etc.)							
Railroad employees, false charges against: Arkansas.....		125					
Missouri.....		636					

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Railroads, height of bridges, etc., over—					Railroads, shelters for workmen on:				
Concluded.					Arkansas.....		65	354	
Michigan.....	555, 556				Arkansas (D).....		79	958-960	
New Hampshire.....	740				Kansas.....		74	280	
Ohio.....	902				Railroads, structures near tracks of:				
Oregon.....	1092	78	623, 624		Ohio.....		50	280, 381	
Rhode Island.....	1092				Rates of wages for over-time on street rail-ways:				
Vermont.....	1196	60	715		California.....	131			
Wisconsin.....		79	1000		Rates of wages of em-ployees of public printing offices:				
Wyoming.....		61	1095		California.....	130			
Railroads, hours of la-bor of employees on. (See Hours of labor.)					Kansas.....		61	1083	
Railroads, illiterate em-ployees on:					Philippine Islands..	1070			
Minnesota.....	602				United States.....	1332, 1333			
New York.....	837, 838				Rates of wages of em-ployees on public works:				
Ohio.....		59	379		California.....	149			
Railroads in hands of federal receivers, rights of employees of:					Delaware.....	223, 224			
United States.....	1377				Hawaii.....		74	261	
Railroads, obstructing, hindering operation of, etc.:					Indiana.....	333			
Delaware.....	217				Nebraska.....	713, 725	76	1031	
Kentucky.....	420				Nevada.....		76	1036	
Mississippi.....	629				New York.....	803	64	905	
(See also Abandon-ment of locomotives; Strikes of railroad em-ployees.)					Rates of wages of weav-ers, etc., to be posted:				
Railroads, rules for em-ployees on. (See Rules, etc.)					Massachusetts.....	524			
Railroads, safety appli-ances on:					Receivers of railroads, rights of employees of:				
Arkansas.....		73	1046		United States.....	1377			
Colorado.....	182				Recommendation, let-ters of. (See Em-ployers' certificates.)				
Colorado (D).....		73	1015-1019		Reduction of wages, no-tice of. (See Wages, reduction of, notice of.)				
Connecticut.....	199, 200				Registration. (See Ex-amination.)				
Delaware.....	223				Relief societies. (See Benefit societies.)				
Illinois.....	290	61	1078-1080		Repayment of em-ployers' advances. (See Employers' advances.)				
Indiana.....	334, 365	74	267-269 273, 274		Resident laborers, pref-erence of, on public works. (See Public works.)				
Iowa.....	369, 370				Restriction of em-ployees in trading. (See Coercion.)				
Kentucky.....	420				Rhode Island, 1904.....		60	713, 714	
Louisiana.....	442				1905.....		64	908, 909	
Maine.....	456				1907.....		78	630	
Massachusetts.....	530, 531				Right of action for in-juries. (See Injuries.)				
Michigan.....	544				Rights of labor. (See Employment of la-bor.)				
	550, 551	75	654		Rules for railroad em-ployees:				
	553-555				Indiana.....		74	274, 275	
Minnesota.....	594, 595	76	1022, 1023		Michigan.....	554			
Mississippi.....	631				Philippine Islands..	1074			
Missouri.....	634, 635	76	1025, 1026						
Nebraska.....	715				S.				
New Hampshire.....	737				Safety appliances. (See				
New York.....	834-836	77	406		Fire escapes on fac-tories; Guards on				
	838				threshing machines,				
Ohio.....	898-902	59	384		etc.; Inspection of				
		70	777-779		factories; Railroads,				
Philippine Islands..	1073, 1074				safety appliances on.)				
Rhode Island.....	1091, 1092				Safety lamps. (See				
South Carolina.....	1102				Mine regulations.)				
Texas.....	1162	65	363						
Vermont.....	1196	79	971						
Virginia.....	1206	60	715						
Virginia (D).....		79	955, 956						
Washington.....	1230, 1231	79	982						
Wisconsin.....	1274								
United States.....	1369-1371	67	985-987						
	1387, 1388	77	917, 918						
		56	414, 415						
		59	299-309						
		59	358-361						
		71	385-389						
United States (D).....		77	377-381						
		78	578-581						

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Sailors. (<i>See</i> Seamen.)				Seats for female employ-			
Sailors' boarding				ees—Concluded.			
houses. (<i>See</i> Lodg-				Virginia.....	1206	73	802
ing houses, sailors'.)				Washington.....	1229, 1234	73	804, 805
Salt works, negligence				West Virginia.....	1262	73	808, 809
of employees in:				Wisconsin.....	1281	73	814
New York.....	838, 839			Wyoming.....	1315	73	815
Scaffolding, etc. (<i>See</i>				Seats for horse-car driv-			
Protection of em-				ers:			
ployees on buildings.)				New Jersey.....	769		
Screening coal. (<i>See</i>				Security for wages. (<i>See</i>			
Weighing coal, etc.)				Protection of wages.)			
Scrip, payment of wages				Service. (<i>See</i> Employ-			
in. (<i>See</i> Payment of				ment of labor.)			
wages in scrip.)				Services, compensation			
Seamen:				for:			
Alabama.....	105			Indiana.....	323		
California.....	135			Set-offs not to defeat ex-			
	230, 232			emptions of wages:			
Florida.....	234, 238			Alabama.....	106		
	239			Sex no disqualification			
Georgia.....	248, 249			for employment:			
Louisiana.....	436-438			California.....	129	73	661
	443			Illinois.....	281	73	684
Maine.....	459			Washington.....	1224	73	804
Maryland.....	474			Shipping masters. (<i>See</i>			
Missouri.....	644-646			Lodging houses, sail-			
North Dakota.....	869, 870			ors'; Seamen.)			
Oregon.....	939, 940			Slave labor:			
Philippine Islands.....		71	394, 396	Nevada.....	728		
South Carolina.....	1107, 1111			Philippine Islands.....	1069		
	1112			Smelting works, hours			
South Dakota.....	1122, 1123			of labor in. (<i>See</i>			
Texas.....	1165			Hours of labor in			
Washington.....	1230			mines, smelters, etc.)			
	1322	57	719	Smelting works, medi-			
United States.....	1334-1336	68	237, 238	cal attendance for em-			
	1343-1369	71	400	ployees in:			
	1380, 1381			New Mexico.....	784		
Seamen, American, for				Smoking in factories:			
ocean mail service:				Minnesota.....	603	73	887
United States.....	1334			Society of labor and in-			
Seamen. (<i>See</i> Lodging				dustry:			
houses, sailors'.)				Kansas.....	407-410		
Seamen's hospitals:				Soliciting money from			
United States.....	1377, 1378			employees. (<i>See</i> Em-			
Seats for employees in				ployment, foremen,			
stores, etc.:				etc., accepting fees			
Florida.....	235	73	677	for furnishing.)			
Seats for female em-				South Carolina, 1904.....	60		714, 715
ployees:					65		360
Alabama.....	109	73	656		78		631
California.....	144	73	662		78		
Colorado.....	165	73	667, 668	South Dakota, 1907.....			
Connecticut.....	208	73	670	Special stock for em-			
Delaware.....	218, 219	73	671, 672	ployees of corpora-			
District of Columbia.....	228, 229	73	676	tions:			
Georgia.....	247	73	680	Massachusetts.....	529, 530		
Indiana.....	325, 346	73	690	Statistics, collection of:			
Iowa.....	381	73	693	Hawaii.....	253	57	703
Kansas.....	392	73	696	Minnesota.....	581		
Kentucky.....		73	698	Missouri.....	664, 665		
Louisiana.....	439, 447	73	700	Montana.....	688, 689		
				Ohio.....	887, 888		
Maryland.....	466, 468	73	703, 704	Utah.....		79	980
				(<i>See also</i> Bureau of			
Massachusetts.....	520	73	716	labor.)			
Michigan.....	547	73	721	Stay of execution in			
Minnesota.....	589	73	723	suits for wages. (<i>See</i>			
Missouri.....	635, 648	73	729	Suits for wages.)			
Nebraska.....	724	73	742	Steam boilers, inspec-			
New Hampshire.....	741	73	749	tion of. (<i>See</i> Inspec-			
New Jersey.....	752, 753	73	750	tion, etc.)			
				Steam boilers, negli-			
New York.....	806, 824	73	758, 765	gence of operators of.			
	828			(<i>See</i> Negligence, etc.)			
Ohio.....	908, 909	73	774	Steamboats, employees			
Oregon.....	949	73	779, 780	on. (<i>See</i> Seamen.)			
Pennsylvania.....	975, 1044	73	784	Steamboats, employ-			
Rhode Island.....	1065	73	792	ment of unlicensed			
South Carolina.....	1108, 1109	73	794, 795	engineers on:			
Tennessee.....		73	798	Alabama.....	107		
Utah.....	1174, 1175	73	800				

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Steamboats, inspection of. (<i>See</i> Inspection, etc.)					Strikes. (<i>See</i> Arbitration of labor disputes; Conspiracy, labor agreements not; Interference with employment.)				
Steamboats, negligence of employees on. (<i>See</i> Negligence, etc.)					Suits for injuries. (<i>See</i> Injuries, etc.)				
Steam engineers, examination, etc., of. (<i>See</i> Examination, etc.)					Suits for wages:				
Sawedores:					California.....		72		640
Maryland.....	492				Georgia.....		68		235
North Carolina.....	852, 853				Idaho.....		272		
Stock, special, for employees of corporations:					Illinois.....	{ 281, 282			
Massachusetts.....	529, 530				Iowa.....		286		
Stockholders, liability of. (<i>See</i> Liability of stockholders, etc.)					Louisiana.....		380		
Stone worked within the State preferred for use on public buildings. (<i>See</i> Public works, preference of domestic materials for.)					Michigan.....		440, 441		
Street railways, examination, etc., of employees on. (<i>See</i> Examination, etc.)					Minnesota.....		541, 562		
Street railways, hours of labor of employees on. (<i>See</i> Hours of labor, etc.)					Missouri.....		598, 599		
Street railways, negligence of employees on:					.....		635		
Louisiana.....	435				New York.....	{ 792, 844	64		906
Street railways, pay for overtime labor on:					.....		845	77	405, 406
California.....	131				North Dakota.....		872		
Street railways, protection of employees on. (<i>See</i> Protection of employees.)					Ohio.....	{ 920, 921			
Street railways, rights and remedies of employees on:					.....		923		
South Carolina.....	1106				Oklahoma.....		932, 933		
Street railways, safety appliances on:					Oklahoma (D).....			79	960, 961
New Hampshire.....		78	1036		Oregon.....			78	623
Street railways, seats for drivers on:					Pennsylvania.....		1038, 1043		
New Jersey.....	769				Texas.....		1163		
Strike, notice of, in advertisements for laborers:					Utah.....		1176		
Illinois.....	296, 297				Wisconsin.....		1276		
Montana.....	711, 712				Wyoming.....		1314, 1315		
Oregon.....	950, 951				United States.....		1335		
Tennessee.....	1140				(<i>See also</i> Payment of wages; Protection of wages; Wages as preferred claims.)				
Strikes of railroad employees:					Sunday labor:				
Delaware.....	216, 217				Alabama.....		109		
Illinois.....	290, 291				Arkansas.....		118		
Kansas.....	387, 388				Colorado.....		171		
Kentucky.....	420				Connecticut.....	{ 196, 197		73	1053
Maine.....	458, 459				.....		199-201		
Mississippi.....	629				Delaware.....		218, 220		
New Jersey.....	782				District of Alaska.....		224		
Pennsylvania.....	971, 972				District of Columbia.....		226, 227		
(<i>See also</i> Abandonment of locomotives; Railroads, obstructing, etc.)					Florida.....		231, 239		
Strikes, participation in, not to be bar to employment:					Georgia.....		247, 248		
Minnesota.....	626				Georgia (D).....			69	457
					Hawaii.....		255, 256	74	243, 244
					Idaho.....			62	333, 334
					Illinois.....		280, 281	72	642
					Indiana.....		324, 325	74	267
					Iowa.....		383		
					Kansas.....		387		
					Kentucky.....		421		
					Louisiana.....		435, 436		
					Maine.....		459		
					Maine (D).....			68	221
					Maryland.....		468		
					Massachusetts.....		501	67	711
					.....		503	75	654
					Michigan.....		553		
					Minnesota.....		601		
					Mississippi.....		630		
					Missouri.....		638		
					Montana.....		704		
					Nebraska.....		723, 724		
					New Hampshire.....		739		
					New Jersey.....		769, 770		
					New Mexico.....		783		
					New York.....		841, 842		
					North Carolina.....		851, 852		
					North Dakota.....		872, 876		
					Ohio.....		926		
					Oklahoma.....		930		
					Oregon.....		930, 940		

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Sunday labor—Cont'd.					Threats. (See Intimidation.)				
Pennsylvania.....	1084				Time for meals to be allowed employees:				
Porto Rico.....	1081				California.....	151			
Rhode Island.....	1094, 1095	67	861, 862		Indiana.....	347	73	838	
Rhode Island (D).....	{ 1102, 1110 }				Iowa.....	439, 447	73	694	
South Carolina.....	1111				Louisiana.....	519	73	700	
South Dakota.....	1124				Massachusetts.....	574	73	715	
Tennessee.....	{ 1127, 1128 }				Michigan.....	815, 823	73	879	
Texas.....	1163, 1164				New York.....		73	763	
Utah.....	1179, 1180				Ohio.....		73	776	
Vermont.....	1198				Oregon.....		73	777	
Virginia.....	1201-1203	60	716, 717		Pennsylvania.....	974, 1045	73	946, 954	
Washington.....	1229, 1239				Time to vote to be allowed employees:				
West Virginia.....	1244				Arizona.....	112			
Wisconsin.....	1280, 1281				Arkansas.....		73	1044	
Wyoming.....	1313				California.....	130			
(See also Weekly day of rest.)					Colorado.....	167			
Sweating system:					Hawaii.....	255			
Connecticut.....	203, 204	73	823		Illinois.....	281			
Illinois.....	284-286	73	831, 832		Indiana.....	332			
Indiana.....	347	73	839		Iowa.....	367, 368			
Maryland.....	467-468	73	857, 858		Kansas.....	388			
Maryland (D).....		58	999-1002		Kentucky.....	{ 417, 421 }			
Massachusetts.....	522, 523	73	868, 869		Maryland.....	469			
Michigan.....	575, 576	73	880, 881		Massachusetts.....	497	57	710	
Missouri.....	666	73	895		Minnesota.....	580			
New Jersey.....	765	73	907		Missouri.....	649, 650			
New York.....	{ 816-818 }	73	{ 920-923 }		Nebraska.....		76	1030, 1031	
Ohio.....	833		925		New York.....	799, 800			
Pennsylvania.....	910, 911	73	936, 937		Ohio.....	920	59	330	
Pennsylvania.....	1060-1062	73	953-956		Oklahoma.....	935			
Wisconsin.....	1238-1290	73	962-964		South Dakota.....	1116			
T.					Tennessee.....	1127			
Taxes of employees, liability of employers for. (See Liability of employers, etc.)					Utah.....	1174			
Telegraph and telephone companies, investigation of:					West Virginia.....	1242			
United States.....		77	416		(See also Protection of employees as voters.)				
Telegraph operators, age of employment of, on railroads:					Trade-marks of mechanics:				
Colorado.....	170	73	666		New Jersey.....	779			
Georgia.....	241	73	679		Trade-marks of trade unions, etc.:				
Nebraska.....		76	1031		Alabama.....	110			
New York.....	837, 838	73	787		Arizona.....	115, 116	65	354, 355	
Wisconsin.....		79	1000, 1001		Arkansas.....		62	330	
Telegraph operators, examination, etc., of:					California.....	130			
Georgia.....	241				Colorado.....	184-186			
Telegraph operators, hours of labor of. (See Hours of labor of employees on railroads.)					Connecticut.....	211, 212	73	1051, 1062	
Telegraph, etc., wires crossing railroads. (See Railroads, height of bridges, etc., over.)					Connecticut (D).....		67	899-891	
Telegraph poles, size, height, etc., of:					Delaware.....	220, 221			
Wyoming.....		61	1095		Florida.....	235-237			
Tenement manufactures. (See Sweating system.)					Georgia.....	240			
Tennessee, 1905.....		65	361, 362		Idaho.....	{ 265, 266 }			
Tennessee, 1907.....		79	958-971		Illinois.....	274			
Termination of employment. (See Employment of labor; Employment, termination of notice of.)					Indiana.....	291-293			
Texas, 1905.....		65	363		Iowa.....	360-362			
Texas, 1907.....		79	971-979		Kansas.....	383, 384			
					Kentucky.....	410, 411			
					Louisiana.....	426, 427			
					Maine.....	445, 446			
					Maryland.....	451, 452			
					Massachusetts.....	464, 465			
					Michigan.....	499, 500			
					Minnesota.....	503-505			
					Missouri.....	603-605			
					Montana.....	668-670			
					Nebraska.....	705, 706			
					Nevada.....	719, 720	63		
					New Hampshire.....		76	1032, 1033	
					New Jersey.....	741, 742			
					New Jersey (D).....	773-778	70	774	
					New York.....		61	1066, 1067	
					Ohio.....	806	57	715	
					Oklahoma.....	905-907			
					Oregon.....	933, 934			
						936-938			

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Trade-marks of trade unions, etc.—Cont'd.				Violation of contract. (See Employment of labor.)			
Pennsylvania.....	1062, 1063			Virginia, 1904.....		60	716, 717
Rhode Island.....	1095-1097			1906.....		70	781, 782
South Dakota.....	1118			Volunteer servants. (See Employment of labor.)			
Tennessee.....	1135, 1136	65	361, 362	Voters, protection of employees as. (See Protection of employees, etc.)			
Texas.....	1159, 1160			Voting by railroad employees:			
Utah.....	1164, 1165			Kansas.....	389		
Virginia.....	1178, 1180			Voting, time for. (See Time to vote.)			
Washington.....	1181						
West Virginia.....	1211, 1212			W.			
Wisconsin.....	1224-1226			Wages as preferred claims:			
Wyoming.....	1257-1259			Alabama.....	97, 110		
(See also Public printing, union label to be used on.)	1271, 1272			Arizona.....	113, 114		
Trade unions. (See Labor organizations.)	1278, 1279			Arkansas.....	117, 118		
Trading, coercion of employees in. (See Coercion.)	1304-1306			California.....	126		
Trains for workmen: Massachusetts.....	532			Colorado.....	136		
Truck system. (See Company stores.)				Connecticut.....	190		
Trustee process, exemption of wages from. (See Exemption of wages from execution, etc.)				Delaware.....	195		
U.				214, 215			
Uniforms, influencing railroad employees not to wear:				District of Alaska.....	223		
New York.....	838			Georgia.....	225		
Union label. (See Public printing, union label to be used on; Trade-marks of trade unions.)				Idaho.....	242		
Union labor to be employed on public works:				Illinois.....	271, 272		
Nebraska.....	725			275, 288			
United States, 1903-1904.....	57		719, 720	Indiana.....	289		
1904-1905.....	60		717-720	337-339			
1905-1906.....	64		909	Iowa.....	337-339	68	236
1906-1907.....	68		237, 238	Kansas.....	390, 392		
1907-1908.....	71		397-402	Louisiana.....	445		
Utah, 1905.....	77		413-416	Maine.....	456, 457		
1907.....	65		384	Maryland.....	469, 470		
	79		979-981	Massachusetts.....	534, 535		
V.				Michigan.....	561, 566		
Vaccination of employees in paper mills:				Minnesota.....	567		
Connecticut.....	207			Missouri.....	598, 600		
Maine.....	449	73	854, 855	633, 640			
Vaccination of employees on public works:				Montana.....	701-703		
Virginia.....		60	717	Nebraska.....	713, 722		
Ventilation, etc., of mines. (See Mine regulations.)				Nevada.....	727, 728		
Vermont, 1904.....				733			
1906.....		60	715, 716	738			
Vessels, inspection of. (See Inspection, etc.)		71	395-397	748			
Vessels of American construction for ocean mail service:				757-759			
United States.....	1334			767, 773		61	1094
				New Mexico.....	791, 804		
				New York.....	805		
				North Carolina.....	880		
				North Dakota.....	871		
				Ohio.....	921, 922		
				Oregon.....	935, 936		
				945, 946			
				972, 973			
				1033-1040			
				1047			
				Rhode Island.....	1094		
				South Dakota.....	1123		
				Texas.....	1160		
				Utah.....	1173, 1175		
				1176, 1179			
				Vermont.....	1195		
				Washington.....	1228, 1229		
				1240			
				Wisconsin.....	1268, 1276		
				Wyoming.....	1303, 1315		
				United States.....	1379, 1380	68	237

	Tenth special.		Bulletin.			Tenth special.		Bulletin.	
	Page.	No.	Page.			Page.	No.	Page.	
Wages, assignment of. (See Assignment of wages.)					Water for employees in factories: Massachusetts.....	536			
Wages, attachment of. (See Attachment of wages.)					Water-closets for workmen on buildings: Michigan.....	568, 569			
Wages, combinations to fix: Louisiana.....		57	704		Weekly day of rest: California.....	138, 139			
Wages, deducting from, for benefit societies. (See Forced contributions.)					Missouri.....	665			
Wages, discounting. (See Payment of wages, modes and times of.)					Pennsylvania.....	1041			
Wages due deceased employees. (See Payment of wages due, etc.)					Weighing coal at mines: Alabama.....	100, 101			
Wages due from contractors. (See Liability of railroad companies for debts, etc.)					Arkansas.....	123, 124	65	351	
Wages due from predecessors, liability of railroad companies for: Wisconsin.....		1274			Colorado.....	180, 188			
Wages, exemption of. (See Exemption of wages.)					Illinois.....	311			
Wages, garnishment of. (See Garnishment of wages.)					Indiana.....	353, 354			
Wages, liability of stockholders for. (See Liability of stockholders, etc.)					Iowa.....	377, 378			
Wages of employees on public works, retention of: California.....		62	330		Kansas.....	402			
Wages, payment of. (See Payment of wages.)					Maryland.....	480, 481			
Wages, preference of. (See Wages as preferred claims.)					Missouri.....	661, 662			
Wages, protection of. (See Protection of wages.)					Montana.....	708, 710			
Wages, rates of. (See Rates of wages.)					New Mexico.....	785, 786			
Wages, recovery of. (See Suits for wages.)					Ohio.....	879, 880			
Wages, reduction of, notice of: Missouri.....	633, 634				Pennsylvania.....	919, 920			
Texas.....	1162, 1163				Tennessee.....	982, 983			
United States.....	1377				Tennessee.....	1005, 1055			
Wages, refusing to pay: Minnesota.....	603				Tennessee.....	1129, 1130			
Montana.....		72	652		Tennessee.....	1138			
Wages, security for. (See Protection of wages.)					Tennessee.....	1176, 1177			
Wages, suits for. (See Suits for wages.)					Utah.....	1221			
Wages, withholding. (See Forced contributions, etc.)					Washington.....	1253, 1254			
Waiver of right to damages. (See Contracts of employees waiving right to damages.)					West Virginia.....	1262			
Washington, 1905.....	67	907-912			Wyoming.....	1312, 1313			
1907.....	79	981-988			West Virginia, 1905.....		67	912-914	
					1907.....		79	988-998	
					Wife's earnings. (See Earnings of married women.)				
					Wisconsin, 1905.....		67	914-918	
					1907.....		79	998-1003	
					Woman and child labor, investigation of: United States.....		71	397	
					Women and children. (See Children and women.)				
					Women, employment of, general provisions: Delaware.....	218-220	73	671-673	
					Indiana.....	346	73	680-682	
					Louisiana.....	447	73	689-701	
					Michigan.....		73	720, 721	
					Minnesota.....		73	723	
					Ohio.....	908, 909	73	774	
					Tennessee.....	1134, 1135	73	708, 709	
					West Virginia.....		73	805-809	
					Wisconsin.....		73	809, 810	
								814	
					Women, employment of, in barrooms, etc.: Arizona.....		73	659, 660	
					District of Alaska.....	224	73	675	
					Iowa.....	370	73	683	
					Louisiana.....	426	73	690	
					Maryland.....	460	73	708	
					Michigan.....	545, 546	73	720, 721	
					Missouri.....	637	73	738	
					New Hampshire.....	744	73	749	
					New York.....	847	73	767	
					Texas.....		79	975	
					Vermont.....	1190	73	804	
					Washington.....	1229	73	804	
					Women, employment of, in coal mines: Pennsylvania.....	975, 976	73	781	

	Tenth special.	Bulletin.			Tenth special.	Bulletin.	
	Page.	No.	Page.		Page.	No.	Page.
Women, employment of. (See Children and women; Seats for fe- male employees; Sex no disqualification for employment.)				Women, night work by:			
Women, hours of labor of:				Indiana.....	345	73	692
Colorado.....	191	73	667	Massachusetts.....	517	73	713
Colorado (D).....	76		989-992	Nebraska.....	724	73	742
Nebraska.....	724	73	742	New York.....	812	73	761, 763
New York.....		73	761-763	New York (D).....		72	611-613
Oregon.....	949	73	779, 780	Women's exchanges, incorporation of:			
Oregon (D).....		67	877-879	Indiana.....	330		
Washington.....	1234	73	631-633	New Jersey.....	773		
(See also Children and women.)			804, 805	Women's wages, col- lection, etc., of:			
Women, married, earn- ings of. (See Earn- ings of married wo- men.)				Massachusetts.....	524	73	718
				Michigan.....	541	73	720
				New York.....	792, 845	73	755
				North Carolina.....		73	768
				Ohio.....		73	773, 774
				Workingmen's trains:			
				Massachusetts.....	532		
				Wyoming, 1905.....		61	1094, 1095

INDEX TO VOLUME 17.

A.

	Page.
Accident frequency in the United States.....	417, 418, 422
Accident liability of coal mine employees in the United States, compared with Great Britain.....	468
Accident liability of electricians and linemen.....	434, 435
Accident liability of railway employees:	
Brakemen.....	447, 463
Conductors.....	447, 448
Engineers.....	447, 448
Firemen.....	447, 449
Flagmen and switchmen.....	446, 448, 464
Freight handlers.....	448, 464
Gatemmen.....	448, 464
Mail clerks.....	446, 447
Trainmen.....	446
Accident liability of railway employees in the United States, compared with Germany.....	458
Accident liability. (<i>See also</i> Accidents.)	
Accident mortality, estimated, of adult males in gainful occupations in the United States.....	418
Accident notification, problem of.....	419
Accident prevention, problem of.....	457, 458
Accident problem, railway, discussion of.....	449
Accident problem, social aspects of.....	458
Accidental injury, degree of.....	419-422
Accidents, causes of.....	423, 456, 457
Accidents in—	
Electrical industries.....	433-436
Factories and workshops.....	424-433, 459, 460
chemical industry.....	426-428
explosives, manufacture of.....	428, 429
iron and steel manufacture.....	425, 426
lumber industry.....	429, 430
metal trades.....	424, 425, 459, 460
sawmills.....	430, 431
textile industries.....	431-433
Life-Saving Service.....	455, 456
Mines and quarries.....	430-444, 461-463
coal mines.....	437, 438, 461
copper mines.....	440, 441
gold and silver mines.....	441
iron mines.....	438, 439, 462
lead and zinc mines.....	439, 440
mineral oil industry.....	442, 443
quarries.....	443, 444, 463
smelting and refining.....	442, 463
Railway transportation.....	444-449, 464
Water transportation.....	449-455, 465
docks and wharves.....	454
fisheries.....	454, 455
navigation.....	449-453, 465
Agricultural implement industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	25, 26, 163
Relative, 1890 to 1907.....	61, 62, 126
Animal and mixed fiber dust, occupations with exposure to, mortality from consumption in.....	784-829
Carpet and rug manufacture.....	808-813, 844, 848-858
Furriers and taxidermists.....	784-789, 848-858
Hatters.....	789-794, 844-846, 848-858
Rag industry.....	817-821
Shoddy manufacture.....	813-817
Silk manufacture.....	794-800, 844, 845, 848-858
Upholsterers and hair mattress makers.....	821-825, 844-847, 855-858
Woolen and worsted manufacture.....	800-808, 844, 845, 848-858
Animal and mixed fiber dust, summary of conclusions regarding occupations with exposure to.....	825-829
Artisans and laborers, compensation for injuries of, in the service of the United States.....	333-335

B.

Bakery, bread, industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	26, 133
Relative, 1890 to 1907.....	62, 126
Blacksmithing and horseshoeing industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	26, 134, 135
Relative, 1890 to 1907.....	62, 63, 126
Boatmen, accident liability of.....	465
Boot and shoe industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	26, 27, 163-165
Relative, 1890 to 1907.....	63-65, 126

	Page.
Brakemen, railway, accident liability of.....	447, 463
Brass workers, mortality of, from consumption.....	661-667, 844, 845, 847-858
Brick industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	27, 28
Relative, 1890 to 1907.....	65, 66, 126
Bridge tenders, accident liability of.....	465
British Old-Age Pensions Act of 1906.....	540-552
Building trades, hours of labor in, in Germany compared with England.....	545
Building trades, rates of wages in:	
German Empire.....	540, 541
German Empire and Great Britain compared.....	543, 544
Building trades, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	28-31, 135-143
Relative, 1890 to 1907.....	66-69, 126
Bulgaria, census of manufactures in, digest of.....	589-594

C.

Cabinetmakers, mortality of, from consumption.....	771-776, 844-858
Candy industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	31
Relative, 1890 to 1907.....	69, 127
Carpet and rug manufacture, mortality from consumption of employees engaged in.....	806-813, 844, 848-858
Carpet industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	31
Relative, 1890 to 1907.....	78, 71, 127
Carriage and wagon industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	32, 165, 166
Relative, 1890 to 1907.....	71, 72, 127
Cars, steam railroad, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	32-34, 166-168
Relative, 1890 to 1907.....	73-75, 127
Causes of accidents in the United States and in New York State, discussion of.....	423, 428, 457
Cement workers, mortality of, from consumption.....	708-711, 855-858
Census of manufactures in Bulgaria, digest of.....	589-594
Charity relief and wage earnings.....	876-877
Age and conjugal condition of recipients of charity relief.....	882-884
Causes of distress.....	901-918
Delinquencies.....	897-901
Earnings.....	888-893
Kind of aid given.....	893-907
Number, nativity, and size of families.....	879-882
Occupations.....	885-888
Summary of results of study.....	919-922
Chemical industry, accidents in.....	426-428
Chile, report on the creation and initiatory work of the office for the collection of labor statistics.....	928, 937
Classification of occupations in dusty trades.....	643, 644
Clothing, factory product, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	34, 36, 143, 144
Relative, 1890 to 1907.....	75-77, 127
Coal mine employees, accident liability of, in the United States, compared with Great Britain.....	456
Coal mining, accidents in.....	457, 458, 461
Compensation for industrial diseases, in Great Britain.....	369, 370
Compensation for injuries of artisans and laborers in the service of the United States.....	853-855
Compositors, mortality of, from consumption.....	673-675, 846, 847, 855-858
Cancellation (Trade Disputes) Act, 1896, proceedings under, in Great Britain.....	865, 566
Conductors, railway, accident liability of.....	447, 448
Consumption frequency, degree of, statistical data and method of determining.....	641-643
Consumption, mortality from, in dusty trades.....	633-675
Brass workers.....	661-667, 844, 845, 847-858
Cabinetmakers.....	771-776, 844-858
Carpet and rug manufacture.....	806-813, 844, 848-858
Cement workers.....	708-711, 855-858
Compositors.....	673-675, 846, 847, 855-858
Cord makers.....	718, 719, 855-858
Cotton spinning.....	727-729
Cotton textile manufacture.....	729-737, 844, 845, 848-854
Diamond cutters.....	689-701
Engravers.....	676-678, 844, 845, 847, 855-858
Flax and linen manufacture.....	780-787
Foundrymen and molders.....	716-718, 847, 855-858
Furriers and taxidermists.....	784-789, 848-858
Glass blowers.....	695, 696, 846, 855-858
Glass cutters.....	696-699, 855-858
Glass workers.....	691-695, 844, 845, 848-854
Gold leaf beaters.....	660, 661, 855-858
Grinders.....	644-649, 855-858
Hatters.....	789-794, 848-858
Hemp and cordage manufacture.....	752-762
Hosiery and knit goods, manufacture of.....	742-748, 844, 845, 847-858
Jewelers.....	657-660, 847, 855-858
Jute and jute goods, manufacture of.....	769-767
Lace manufacture.....	746-750, 848-854
Lithographers.....	719-722, 848-858
Marble workers.....	689-691, 844-847, 855-858
Paper and pulp manufacture.....	768-771, 844, 845, 848-858
Paper hangers.....	714-716, 844, 845, 847-858
Plasterers.....	711-714, 844-847, 855-858
Polishers.....	649-652, 847, 855-858

Consumption, mortality from, in dusty trades—Concluded.		Page.
Potters.....	701-708, 844, 845, 848-858	
Pressmen.....	676, 846, 847	
Printers.....	667-673, 844-858	
Rag industry.....	817-821	
Shoddy manufacture.....	813-817	
Silk manufacture.....	794-800, 844, 845, 848-858	
Stone workers.....	665-668, 855-858	
Textile spinners.....	737-740, 847, 855-858	
Textile weavers.....	740-742, 847, 855-858	
Tool and instrument makers.....	662-667, 844, 845, 847-858	
Upholsterers and hair-mattress makers.....	821-825, 844-847, 855-858	
Wood turners and carvers.....	776-780, 847-858	
Woolen and worsted manufacture.....	800-808, 844, 845, 848-858	
Consumption, mortality from, in dusty trades, general summary of statistics relating to.....	829-833	
Consumption, other respiratory diseases, and all causes, deaths due to, among males in the registration area of the United States, 1900 to 1906, by age groups.....	859	
Copper mining, accidents in.....	440, 441	
Coke makers, mortality of, from consumption.....	718, 719, 855-858	
Cost of living and retail prices.....	197-200	
Cost of living of the working classes in the principal towns of—		
German Empire.....	522-548	
Great Britain.....	336-354	
Cotton ginning, mortality from consumption of employees engaged in.....	727-729	
Cotton goods industry, wages and hours of labor of employees in:		
Average, 1906 and 1907.....	35, 36, 166, 169	
Relative, 1900 to 1907.....	77, 78, 127	
Cotton textile manufacture, mortality from consumption of employees engaged in.....	729-737, 844, 845, 848-854	

D.

Deaths from accidents, estimated number of, among adult males in gainful occupations in the United States.....	418
Deaths from accidents. (<i>See also</i> Accidents.).....	
Decisions of courts affecting labor:	
Employers' liability—	
employment of children—age limit—certificates—negligence.....	371, 372
employment of children—age limit—constitutionality of statute—unlawful employment as cause of injury.....	584-586
employment of children—violation of statute—defenses—discovering age.....	953-955
employment of children—violation of statute—negligence—remedies.....	577, 578
fellow-servant law—contracts with relief department—release—validity.....	372-377
railroad companies—automatic couplers—repair.....	377-381
railroad companies—federal statute—validity in the District of Columbia and Territories.....	532-534
railroad companies—safety-appliance law—maintenance of statutory condition—delegation of legislative power.....	578-581
railroads—tortfeas—conformity to law as defense.....	955, 956
railway relief associations—status.....	617-620
railway relief funds—contracts—release.....	372-377
railway relief funds—contracts limiting liability—effect of statute—construction—disability.....	286-288
Employment of children—age limit—constitutionality.....	281, 282
Employment of labor—agreements between mine owners—conspiracy—evidence.....	580-596
Hours of labor of employees on railroads—constitutionality of statute—effect of federal on state law.....	382-384
Injunction—violation—contempt—persons not parties to original bill—notice—nature of proceedings.....	961-965
Interference with employment—intimidation.....	596, 597
Labor organizations—	
benefits—construction of by-laws.....	603, 604
boycott—action for damages—attachment—unincorporated associations as parties.....	597-601
boycott—injunction—freedom of speech—conspiracy—remedies.....	604-608
collection of fines—conspiracy.....	292, 293
enforcement of rules—open shop—strikes—injunction—parties.....	393-395
expulsion of members—forfeiture of benefit policy—measure of damages—acts of third parties.....	608-617
protection of employees as members—constitutionality of statute.....	580-596
strikes—picketing—injunction—conspiracy—evidence.....	597-601
unincorporated associations as parties to action—attachment for damages.....	597-601
violation of trade agreements—right to strike—acts of officers—injunction.....	389-392
Payment of wages in scrip—constitutionality of statutes—unlawful discrimination.....	384-396
Protection of wages—assignment of claims—public work.....	958-958
Public work—protection of wages—contractors' bonds—assignments of claims.....	956-958
Railroads—shelters over repair tracks—constitutionality and construction of statute.....	958-960
Strikes—injunction—picketing—interference with employment.....	965-967
Strikes—picketing—use of streets—municipal regulation—constitutionality.....	601-603
Suits for wages—attorneys' fees—constitutionality and construction of statute.....	960, 961
Diamond cutters, mortality of, from consumption.....	699-701
Digest of recent foreign statistical publications:	
Bulgaria—	
Recensement des Industries Encouragées par l'État (31 décembre, 1904).....	559-564
Chile—	
La Oficina de Estadística del Trabajo.....	936, 937
Great Britain—	
Compensation for Industrial Diseases.....	369, 370
Report of the Departmental Committee Appointed to Consider whether the Post-Office should Provide Facilities for Insurance under the Workmen's Compensation Acts.....	566-568
Sixth Report of Proceedings under the Conciliation (Trade Disputes) Act, 1906.....	546, 546
Statistics of Proceedings under the Workmen's Compensation Acts, 1897 and 1900, and the Employers' Liability Act, 1880, during the year 1906.....	364-369

Digest of recent foreign statistical publications—Concluded.

India—	Page.
Report of the Textile Factories Labor Committee Appointed by the Government of India, December, 1906, to Inquire into the Condition of Factory Labor in India.....	568-571
Italy—	
I Lavoratori delle Miniere.....	937-941
Salari ed Orari nei Lavori Edilizi, Stradali, Idraulici e di Bonifica, 1906.....	941-943
Statistica degli scioperi avvenuti in Italia nell' Anno 1904.....	571-574
Russia—	
Chislennost i Sostav rabochikh v Rossii na osnovanii dannyykh pervoi vseobshchey perepisi naselenia Rossiiskoi Imperii 1897 goda (Number and distribution of wage-workers in Russia, based upon the data of the first general census of population of the Russian Empire in 1897).....	942-949
Svod Otchetov Fabrichnykh Inspectorov za 1904 god (Digest of reports of factory inspectors for 1904).....	574-576
Digest of recent reports of state bureaus of labor statistics:	
Maine.....	923-926
Michigan.....	926, 929
Minnesota.....	355, 356
Missouri.....	356-358, 553-556
New Jersey.....	930-933
Ohio.....	934, 935
Rhode Island.....	556-558
Wisconsin.....	359-363
Diseases, industrial, compensation for, in Great Britain.....	369, 370
Diseases of the respiratory system other than consumption, mortality from, in dusty trades:	
Brass workers.....	846, 847, 851, 854, 858
Cabinetmakers.....	846, 847, 851, 854, 858
Carpet and rug manufacture.....	851, 854, 858
Cement workers.....	858
Compositors.....	846, 847, 858
Cordage makers.....	851, 854
Core makers.....	858
Cotton textile manufacture.....	735, 737, 851, 854
Engravers.....	847, 858
Flax and linen manufacture.....	735
Foundrymen and molders.....	847, 858
Furriers and taxidermists.....	851, 854, 858
Glass blowers.....	846, 858
Glass cutters.....	858
Glass workers.....	695, 846, 851, 854
Gold leaf beaters.....	858
Grinders.....	648, 858
Hatters.....	798, 846, 851, 854, 858
Hosiery and knit goods, manufacture of.....	745, 847, 851, 854, 858
Jewelers.....	847, 858
Lace manufacture.....	851, 854
Lithographers.....	851, 854, 858
Marble workers.....	846, 847, 858
Paper and pulp manufacture.....	851, 854, 858
Paper hangers.....	847, 851, 854, 858
Plasterers.....	846, 847, 858
Potters.....	706, 708, 851, 854, 858
Pressmen.....	672, 846, 847, 851, 854, 858
Printers.....	858
Rope makers.....	851, 854, 858
Silk manufacture.....	846, 847, 858
Stone workers.....	858
Textile spinners.....	738, 847, 858
Textile weavers.....	738, 741, 847, 858
Tool and instrument makers.....	656, 847, 851, 854, 858
Upholsterers.....	846, 847, 858
Wood turners and carvers.....	847, 851, 854, 858
Woolen and worsted manufacture.....	807, 851, 854, 858
Diseases of the respiratory system other than consumption, number and per cent of deaths due to, among occupied males in certain occupations, 1897 to 1906.....	858
Docks and wharves, accidents at.....	454
Dusty trades, mortality from consumption in. (See Consumption, mortality from, in dusty trades.)	
Dusty trades, occupation classification of.....	643, 644
Dyeing, finishing, and printing textiles, wages and hours of labor of employees engaged in:	
Average, 1906 and 1907.....	36, 160, 170
Relative, 1890 to 1907.....	79, 80, 128

E.

Electrical apparatus and supplies, wages and hours of labor of employees engaged in the manufacture of:

Average, 1906 and 1907.....	36, 37
Relative, 1890 to 1907.....	80, 81, 128
Electrical industries, accidents in.....	433-436
Electrical risk in mining.....	442
Electricians and linemen, accident liability of.....	434, 435
Emigration, Mexican, to the United States, effect of, upon labor efficiency of Mexicans.....	504-506
Emigration, Mexican, to the United States, effects of, in Mexico.....	513-519
Employers' Liability Act, 1880, proceedings under, in Great Britain.....	364-369
Employment offices, free, in Missouri, operations of.....	545
Engineering trades, hours of labor in, in Germany, compared with England.....	556
Engineering trades, per cent of increase in weekly wages in, for five German towns, between October, 1905, and March, 1906.....	547

	Page.
Engineering trades, rates of wages in:	
German Empire	540, 541
German Empire and Great Britain, compared	543, 544
Engineers, railway, accident liability of	447, 448
Engravers, mortality of, from consumption	676-678, 844, 845, 847, 855-858
Explosives, manufacture of, accidents in	428, 429
F.	
Factories and workshops, accidents in	424-433, 459, 460
Factory inspectors' reports for Russia, digest of	574-576
Factory labor in India, report on condition of	568-571
Farm laborers, Mexico, in the United States	482-485
Fatal accident frequency in the United States	418, 422
Fatal accidents among occupied adult males in the United States, estimated number of	418
Fatal accidents. (<i>See also</i> Accidents.)	
Firemen, railway, accident liability of	447, 449
Fisheries, accidents in the	454, 455
Flagmen and switchmen, railway, accident liability of	446, 448, 464
Flax and linen manufacture, mortality from consumption of employees engaged in	750-757
Flour industry, wages and hours of labor of employees engaged in:	
Average, 1906 and 1907	37, 170
Relative, 1890 to 1907	81, 82, 128
Food, cost of, for average British and German workingman's budgets, compared	538, 539
Food, quantity of, consumed by workingmen's families in Germany	635
Food, retail prices of, 1890 to 1907	181-332
Foundry and machine-shop industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	37-39, 144-149
Relative, 1890 to 1907	82-84, 128
Foundrymen and molders, mortality of, from consumption	716-718, 847, 855-858
Freight handlers, railway, accident liability of	448, 464
Furniture industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	39, 149, 150
Relative, 1890 to 1907	84, 85, 128
Furriers and taxidermists, mortality of, from consumption	784-789, 848-858
G.	
Gas industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	40
Relative, 1890 to 1907	85, 128
Gatemmen, railway, accident liability of	448, 464
Germany, cost of living of working classes in	522-548
Glass blowers, mortality of, from consumption	695, 696, 846, 855-858
Glass cutters, mortality of, from consumption	696-699, 855-858
Glass industry, mortality from consumption of employees engaged in	691-699
Glass industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	40, 41
Relative, 1890 to 1907	85-87, 129
Glassworkers, mortality of, from consumption	691-695, 844, 845, 848-854
Gold and silver mining, accidents in	441
Gold-leaf beaters, mortality of, from consumption	660, 661, 855-858
Great Britain:	
Compensation for industrial diseases	369, 370
Cost of living of the working classes in the principal industrial towns of	336-354
Electrical accidents in	435, 436
Navigation accidents in	450-452
Proceedings under Conciliation (Trade disputes) Act, 1896, in	565, 566
Proceedings under Workmen's Compensation Acts, 1897 and 1900, and Employers' Liability Act, 1880	364-369
Report on question of providing insurance by post-office in, under Workmen's Compensation Acts	566-568
Textile accidents in	432, 433
Grinders, mortality of, from consumption	644-649, 855-858
H.	
Harness industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	42, 171
Relative, 1890 to 1907	88, 129
Hats, fur, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907	42, 43, 172
Relative, 1890 to 1907	89-91, 129
Hatters, mortality of, from consumption	789-794, 848-858
Hemp and cordage manufacture, mortality from consumption of employees engaged in	757-762
Home life and standard of living of Mexican laborers	501-504
Hosiery and knit-goods industry, wages and hours of labor of employees in:	
Average, 1906 and 1907	43, 172
Relative, 1890 to 1907	91-93, 129
Hosiery and knit goods, manufacture of, mortality from consumption of employees engaged in	743-746, 844, 845, 847-858
Hours of labor and wages, average, 1906 and 1907:	
By occupations and geographical divisions	17, 18, 25-60
In selected occupations, by cities	24, 133-162
In selected occupations, by States	24, 163-180
Hours of labor and wages in manufacturing industries, 1890 to 1907	1-180
Hours of labor and wages, relative, 1890 to 1907:	
By industries	21-24, 126-132
By occupations	18-21, 61-125
Hours of labor in the building, engineering, and printing trades in Germany compared with England	545, 546

I.

	Page.
Immigration, Mexican:	
Distributing centers of.....	474, 475
Effects of, in the United States.....	519-522
Source of.....	468, 469
Income, average weekly, of workmen's families in Germany.....	534
Increase or decrease in wages and in hours of labor, per cent of, in 1907 as compared with average for 1890-1899, by industries.....	10
Increase or decrease in wages and in hours of labor, per cent of, in 1907 as compared with 1906, by industries.....	2
India, conditions of factory labor in.....	568-571
Industrial accidents.....	417-465
Industrial diseases, compensation for, in Great Britain.....	308, 370
Industrial diseases. (See also Consumption; Diseases.).....	
Industrial statistics of Rhode Island.....	556, 557
Industries, manufacturing, statistics of:	
Missouri.....	357, 563, 564
New Jersey.....	930, 931
Ohio.....	934
Rhode Island.....	556, 557
Wisconsin.....	362, 363
Injuries of artisans and laborers in the service of the United States, compensation for.....	333-335
Injury, accidental, degree of.....	419-422
Insurance, question of providing facilities for, by post-office in Great Britain under Workmen's Compensation Acts.....	596-598
Iron and steel, bar iron and steel, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	44
Relative, 1900 to 1907.....	93, 94, 129
Iron and steel, Bessemer converting, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	44, 45
Relative, 1900 to 1907.....	93, 94, 130
Iron and steel, blast furnace, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	45
Relative, 1900 to 1907.....	94, 95, 129
Iron and steel manufacture, accidents in.....	425, 426
Iron mining, accidents in.....	426, 428, 429
Italy:	
Condition of employees in mines and quarries, 1906, report on.....	937-941
Strikes and lockouts in, report on.....	571-574
Wages and hours of labor of employees on public works, 1906, report on.....	941, 942

J.

Jewelers, mortality of, from consumption.....	657-660, 847, 853-858
Jute and jute goods, manufacture of, mortality from consumption of employees engaged in.....	762-767

L.

Labor efficiency of Mexicans, effect of emigration upon.....	504-506
Laborers and artisans, compensation for injuries of, in the service of the United States.....	333-335
Labor, factory, in India, conditions of.....	568-571
Labor, Mexican, in the United States.....	468-522
Labor organization in Mexico, effects of emigration to the United States on.....	516, 517
Labor statistics, digest of reports of state bureaus of:	
Maine.....	926-926
Michigan.....	926-929
Minnesota.....	355, 356
Missouri.....	356-358, 553-556
New Jersey.....	930-933
Ohio.....	934, 935
Rhode Island.....	556-559
Wisconsin.....	359-363
Laborers, Mexican, character of, and comparison with other nationalities.....	496-501
Lace manufacture, mortality from consumption of employees engaged in.....	746-750, 848-854
Laws relating to labor. (See Cumulative index of labor laws and decisions relating thereto, pp. 1905 to 1907.).....	
Lead and zinc mining, accidents in.....	469, 440
Leather industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	46, 47, 172-174
Relative, 1900 to 1907.....	96-98, 130
Life-Saving Service, accidents in the.....	455, 456
Linemen and electricians, accident liability of.....	434, 435
Liquors, malt, wages and hours of labor of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	47, 48, 150, 151
Relative, 1900 to 1907.....	98, 99, 130
Lithographers, mortality of, from consumption.....	719-722, 848-856
Living conditions and home life of Mexican laborers.....	501-504
Lockouts and strikes in Italy, report on.....	571-574
Lumber industry, accidents in.....	429, 430
Lumber industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	48, 49, 174, 175
Relative, 1900 to 1907.....	100, 101, 130
Lumbering and woodworking, Mexican laborers employed in.....	494

MI.

	Page.
Mail clerks, railway, accident liability of.....	446, 447
Maine, statistics relating to.....	923-926
Child labor.....	926
Factories, mills, and shops built.....	923
Labor laws.....	926
Labor unions.....	923, 924
Opportunities for new industries.....	925, 926
School teachers.....	925
Women and children in sardine factories.....	924
Women wage-workers of Portland.....	924, 925
Manufactures in Bulgaria, census of, digest of.....	550-564
Manufacturing industries, statistics of:	
Missouri.....	357, 553, 554
New Jersey.....	930, 931
Ohio.....	934
Rhode Island.....	556, 557
Wisconsin.....	362, 363
Marble and stone work, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	49, 50, 152, 153
Relative, 1890 to 1907.....	101-103, 130
Marble workers, mortality of, from consumption.....	688-691, 844-847, 855-858
Metallic dust, occupations with exposure to, mortality from consumption in.....	644-681
Brass workers.....	661-667
Compositors.....	673-675
Engravers.....	676-678
Gold leaf beaters.....	660, 661
Grinders.....	644-649
Jewelers.....	657-660
Polishers.....	640-652
Pressmen.....	676
Printers.....	667-673
Tool and instrument makers.....	652-657
Metallic dust, summary of conclusions regarding occupations with exposure to.....	678-681
Metal trades, accidents in.....	424, 425, 459, 460
Mexican immigrants to the United States, characteristics of.....	468, 467, 469
Mexican immigration to the United States, source of.....	468, 469
Mexican labor in the United States:	
Character of, and comparison with labor of other nationalities.....	496-501
Efficiency of.....	504-506
Home life and standard of living of.....	501-504
Method of distribution of.....	475, 476
Migration of, method and conditions of.....	469-474
Occupations of, miscellaneous.....	494-496
Race prejudice toward.....	511-513
Social conditions of.....	506-511
Mexican labor in the United States employed in—	
Farming.....	492-495
Lumbering and woodworking industries.....	494
Mining.....	485-493
Railroad work.....	477-482
Mexico, effects in, of Mexican emigration to the United States.....	513-519
Michigan, statistics relating to.....	920-929
Beet sugar and Portland cement industries.....	927
Electric railways.....	929
Free employment bureaus.....	928, 929
Furniture, boot and shoe, corset, and refrigerator industries.....	928
Labor disagreements, 1907.....	927
Miscellaneous industries.....	927
Penal and reformatory institutions.....	927
Power used in manufacturing.....	929
Technical papers.....	926
The coal industry.....	927, 928
Mine laborers, Mexican, wages of.....	495-496
Mineral dust, occupations with exposure to, mortality from consumption in.....	681-726
Cement workers.....	708-711
Core makers.....	718, 719
Diamond cutters.....	699-701
Foundrymen and molders.....	716-718
Glass blowers.....	695, 696
Glass cutters.....	696-699
Glass workers.....	691-696
Lithographers.....	719-722
Marble workers.....	688-691
Paper hangers.....	714-716
Plasterers.....	711-714
Pottery.....	701-708
Stone workers.....	685-688
Mineral dust, summary of conclusions regarding occupations with exposure to.....	722-726
Mineral oil industry, accidents in.....	442, 443
Mines and quarries, accidents in.....	436-444
Mining, electrical risk in.....	442
Minnesota, statistics relating to.....	355, 356
Accidents to labor.....	356
Child labor.....	355
Free employment office.....	356
Labor organizations.....	355, 356

	Page.
Missouri, statistics relating to.....	356-358, 553-558
Free employment offices.....	358, 556
Labor organizations.....	358, 554, 556
Land, assessed valuation of.....	357, 558
Land, Government, acres of.....	357, 558
Manufacturing industries.....	357, 553, 554
Prison shops.....	356, 357, 558
Products, surplus, value of.....	356, 357, 558
Mortality from consumption in dusty trades. (<i>See Consumption, mortality from in dusty trades.</i>)	
Mortality from diseases of the respiratory system, other than consumption, in dusty trades. (<i>See Diseases of the respiratory system other than consumption, mortality from in dusty trades.</i>)	
Mortality, list of references on occupation.....	859-875

N.

Navigation, accidents in.....	449-453
New Jersey, statistics relating to.....	930-933
Cost of living.....	932
Economic changes in the building trades.....	932, 933
Fruit and vegetable canning.....	932
Industrial chronology.....	933
Manufactures.....	930, 931
New Jersey as a manufacturing State.....	932
Steam railroads.....	932

O.

Occupation classification of dusty trades.....	643, 644
Occupations in which Mexicans are employed.....	477-496
Occupations, males employed in various, in the United States, 1900, by age groups:	
Number of.....	844
Per cent of.....	845
Occupations with exposure to animal and mixed fiber dust. (<i>See Animal and mixed fiber dust, occupations with exposure to.</i>)	
Occupations with exposure to metallic dust. (<i>See Metallic dust, occupations with exposure to.</i>)	
Occupations with exposure to mineral dust. (<i>See Mineral dust, occupations with exposure to.</i>)	
Occupations with exposure to vegetable fiber dust. (<i>See Vegetable fiber dust, occupations with exposure to.</i>)	
Ohio, statistics relating to.....	934, 935
Coal mining.....	934, 935
Free public employment offices.....	935
Manufactures.....	934
Oil industry, mineral, accidents in.....	442, 443
Old-Age Pensions Act of 1908, British.....	549-552
Opinions of the Attorney-General on questions affecting labor:	
Eight-hour law—application to lock tenders.....	950, 951
Eight-hour law—application to messengers, watchmen, etc.....	951, 952

P.

Paper and pulp manufacture, mortality from consumption of employees engaged in.....	768-771, 844, 845, 848-858
Paper and wood-pulp industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	51, 52, 175, 176
Relative, 1890 to 1907.....	103-106, 130
Paper hangers, mortality of, from consumption.....	714-716, 844, 845, 847-858
Planing-mill industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	52, 53, 153-155
Relative, 1890 to 1907.....	106, 107, 131
Plasterers, mortality of, from consumption.....	711-714, 844-847, 855-858
Polishers, mortality of, from consumption.....	649-652, 847, 855-858
Potters, mortality of, from consumption.....	701-708, 844, 845, 848-858
Pottery industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	53
Relative, 1890 to 1907.....	107, 108, 131
Pressmen, mortality of, from consumption.....	676, 846, 847
Prevention of accidents, problem of.....	457, 458
Prices, retail, and rates of wages, changes in, in Germany, between October, 1905, and March, 1908.....	546-548
Prices, retail, rents, and rates of wages, changes in, in Great Britain, between October, 1905, and October, 1907.....	354
Prices, retail, of commodities paid by working classes:	
German Empire.....	531-537
German Empire and Great Britain compared.....	537-540, 546
Prices, retail, of food, 1890 to 1907.....	181-332
Printers, mortality of, from consumption.....	667-673, 844-858
Printing and binding, book and job, wages and hours of labor of employees engaged in:	
Average, 1906 and 1907.....	53-55, 155-157
Relative, 1890 to 1907.....	108-110, 131
Printing, newspaper, wages and hours of labor of employees engaged in:	
Average, 1906 and 1907.....	55, 157-160
Relative, 1890 to 1907.....	110, 111, 131
Printing trades, hours of labor in, in Germany compared with England.....	545
Printing trades, rates of wages:	
German Empire.....	540, 541
German Empire and Great Britain compared.....	543, 544
Problem of ventilation and dust removal in industry.....	833-843

Q.	Page.
Quarries and mines, accidents in.....	436-444, 463

R.

Race prejudice toward Mexican labor in the United States.....	511-513
Rag industry, mortality from consumption of employees engaged in.....	817-821
Rail, transportation by, accidents in.....	444-449
Railway accident problem, discussion of.....	449
Railway employees, accident liability of. (See Accident liability of railway employees.)	
Railway laborers, Mexican, in the United States compared with other nationalities.....	477, 478
Railway mail clerks, accident liability of.....	446, 447
Refining and smelting, accidents in.....	442, 450
Relative retail prices of food, by months, 1905 to 1907.....	211, 321, 322
Relative retail prices of food, 1890 to 1907.....	211-214, 323-332
Relative wages and hours of labor, 1890 to 1907, by industries.....	21-24, 126-132
Relative wages and hours of labor, 1890 to 1907, by occupations.....	18-21, 61-125
Rents of working-class dwellings:	
German Empire.....	526-529
German Empire and Great Britain compared.....	529, 530, 545, 546
Great Britain.....	337-341
Rents, retail prices, and rates of wages, changes in, in Great Britain, between October, 1905, and October, 1907.....	354
Respiratory diseases other than consumption, mortality from, in dusty trades. (See Diseases of the respiratory system other than consumption, mortality from, in dusty trades.)	
Retail prices and cost of living.....	197-200
Retail prices and rates of wages, changes in, in Germany, between October, 1905, and March, 1908.....	546-548
Retail prices of commodities paid by working classes:	
German Empire.....	531-537
German Empire and Great Britain compared.....	537-540, 546
Great Britain.....	341-347
Retail prices of food, 1890 to 1907.....	181-322
Retail prices of food, 1906 and 1907.....	210, 211, 215-320
Retail prices of food, relative, by months, 1905 to 1907.....	211, 321, 322
Retail prices of food, relative, 1890 to 1907.....	211-214, 323-332
Retail prices, rents, and rates of wages, changes in, in Great Britain, between October, 1905, and October, 1907.....	354
Rhode Island:	
Accidents in textile industries.....	432
Manufacturing industries, statistics of.....	556, 557
Riggers, accident liability of.....	465
Risk, electrical, in mining.....	442
Russia:	
Factory inspectors' reports for, digest of.....	574-576
Number and distribution of wage-workers, 1897.....	942-949

S.

Sawmills, accidents in.....	430, 431
Scope of discussion of industrial accidents.....	423, 424
Shipbuilding industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	55-57, 176-178
Relative, 1890 to 1907.....	111-114, 131
Shoddy manufacture, mortality from consumption of employees engaged in.....	813-817
Silk industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	57, 58, 178, 179
Relative, 1890 to 1907.....	115-117, 131
Silk manufacture, mortality from consumption of employees engaged in.....	794-800, 844, 845, 848-858
Silver and gold mining, accidents in.....	441
Slaughtering and meat packing industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	58
Relative, 1890 to 1907.....	118-120, 132
Smelting and refining, accidents in.....	442, 450
Social aspects of the accident problem.....	458
Social conditions of Mexicans in the United States.....	506-511
Steel and iron manufacture, accidents in.....	425, 426
Stone industry, mortality from consumption of employees engaged in.....	682-691, 846, 847
Stone workers, mortality of, from consumption.....	685-688, 855-858
Streets and sewers, wages and hours of labor of employees engaged upon:	
Average, 1906 and 1907.....	58, 160, 161
Relative, 1890 to 1907.....	120, 121, 132
Strikes and lockouts in Italy, report on.....	571-574
Switchmen and flagmen, railway, accident liability of.....	446, 448, 464

T.

Textile industries, accidents in.....	431-433
Textile spinners, mortality of, from consumption.....	737-740, 847, 855-858
Textile weavers, mortality of, from consumption.....	740-742, 847, 855-858
Tobacco (cigars), wages and hours of employees engaged in the manufacture of:	
Average, 1906 and 1907.....	59, 60, 162
Relative, 1890 to 1907.....	121-123, 132
Tool and instrument makers, mortality of, from consumption.....	652-657, 844, 845, 847-858
Trainmen, railway, accident liability of.....	445
Transportation by rail, accidents in.....	444-449
Transportation by water, accidents in.....	449-455

U.

Upholsterers and hair-mattress makers, mortality of, from consumption.....	821-825, 844-847, 855-858
--	---------------------------

V.

Page.

Vegetable fiber dust, occupations with exposure to, mortality from consumption in.....	726-734
Cabinetmakers.....	771-776
Cotton ginning.....	727-729
Cotton textile manufacture.....	729-737
Flax and linen manufacture.....	750-757
Hemp and cordage manufacture.....	757-762
Hosiery and knit goods, manufacture of.....	743-746
Jute and jute goods, manufacture of.....	762-767
Lace manufacture.....	746-750
Paper and pulp manufacture.....	768-771
Textile spinners.....	737-740
Textile weavers.....	740-742
Wood turners and carvers.....	776-780
Vegetable fiber dust, summary of conclusions regarding occupations with exposure to.....	780-784
Ventilation and dust removal in industry, problem of.....	823-843

W.

Wages and hours of labor, average, 1906 and 1907:	
By occupations and geographical divisions.....	17, 18, 25-60
In selected occupations, by cities.....	24, 132-162
In selected occupations, by States.....	24, 163-180
Wages and hours of labor in manufacturing industries, 1890 to 1907.....	1-180
Wages and hours of labor, relative, 1890 to 1907:	
By industries.....	21-24, 126-132
By occupations.....	18-21, 61-125
Wages in Mexico, effects of Mexican emigration to the United States on.....	513-516
Wages of Mexican laborers in the United States:	
Farming.....	432-484
Lumbering and woodworking industry.....	404
Mines.....	488-496
Railways.....	478-482
Various occupations.....	495
Wages, rates of, and retail prices, changes in, in Germany, between October, 1905, and March, 1906.....	546-548
Wages, rates of, in Great Britain.....	549-552
Wages, rates of, in the building, engineering, and printing trades:	
German Empire.....	540, 541
German Empire and Great Britain compared.....	543, 544, 546
Wages, rates of, relation of, to rents and prices, in Great Britain.....	552, 553
Wages, rates of, rents, and retail prices, changes in, in Great Britain, between October, 1905, and October, 1907.....	354
Wages, statistics of:	
Bulgaria.....	552-564
German Empire.....	540-545
Wages, weekly, per cent of increases in, for five German towns, between October, 1905, and March, 1906:	
Building trades.....	548
Engineering trades.....	547
Wage-workers in Bulgaria, statistics of.....	566-564
Water transportation, accidents in.....	446-455
Wharves and docks, accidents at.....	464
Wholesale and retail prices of food compared.....	195-197
Wisconsin, statistics relating to.....	356-363
Cooperative stores in the United States.....	359
Free employment offices.....	366
Housing.....	361
Liquor traffic.....	361
Manufacturing industries.....	362, 363
Resources, industries, and opportunities.....	361, 362
Statistical aspect of the strike.....	360, 361
Wood turners and carvers, mortality of, from consumption.....	776-780, 847-868
Woolen and worsted goods industry, wages and hours of labor of employees in:	
Average, 1906 and 1907.....	60, 179, 180
Relative, 1890 to 1907.....	123-125, 132
Woolen and worsted manufacture, mortality from consumption of employees engaged in.....	800-808, 844, 845, 848-858
Working-class dwellings, rents of:	
German Empire.....	526-529
German Empire and Great Britain compared.....	529, 530, 543, 546
Working classes, cost of living of, in the principal towns of Great Britain.....	336-354
Working classes in Bulgaria, statistics of.....	560-564
Workmen's Compensation Acts, 1897 and 1900, proceedings under, in Great Britain.....	364-360
Workshops and factories, accidents in.....	424-423

Z.

Zinc and lead mining, accidents in.....	430, 440
---	----------

LEADING ARTICLES IN PAST NUMBERS OF THE BULLETIN.

- No. 1. Private and public debt in the United States, by George K. Holmes.^(a)
Employer and employee under the common law, by V. H. Olmsted and S. D. Fessenden.^(a)
- No. 2. The poor colonies of Holland, by J. Howard Gore, Ph. D.^(a)
The industrial revolution in Japan, by William Eleroy Curtis.^(a)
Notes concerning the money of the U. S. and other countries, by W. C. Hunt.^(a)
The wealth and receipts and expenses of the U. S., by W. M. Steuart.^(a)
- No. 3. Industrial communities: Coal Mining Co. of Anzin, by W. F. Willoughby.
- No. 4. Industrial communities: Coal Mining Co. of Blanzy, by W. F. Willoughby.^(a)
The sweating system, by Henry White.^(a)
- No. 5. Convict labor.
Industrial communities: Krupp Iron and Steel Works, by W. F. Willoughby.
- No. 6. Industrial communities: Familistère Society of Guise, by W. F. Willoughby.
Cooperative distribution, by Edward W. Bemis, Ph. D.
- No. 7. Industrial communities: Various communities, by W. F. Willoughby.^(a)
Rates of wages paid under public and private contract, by Ethelbert Stewart.^(a)
- No. 8. Conciliation and arbitration in the boot and shoe industry, by T. A. Carroll.^(a)
Railway relief department, by Emory R. Johnson, Ph. D.^(a)
- No. 9. The padrone system and padrone banks, by John Koren.^(a)
The Dutch Society for General Welfare, by J. Howard Gore, Ph. D.^(a)
- No. 10. Condition of the Negro in various cities.^(a)
Building and loan associations.^(a)
- No. 11. Workers at gainful occupations at censuses of 1870, 1880, and 1890, by W. C. Hunt.
Public baths in Europe, by Edward Mussey Hartwell, Ph. D., M. D.
- No. 12. The inspection of factories and workshops in the U. S., by W. F. Willoughby.^(a)
Mutual rights and duties of parents and children, guardianship, etc., under the law, by F. J. Stimson.^(a)
The municipal or cooperative restaurant of Grenoble, France, by C. O. Ward.^(a)
- No. 13. The anthracite mine laborers, by G. O. Virtue, Ph. D.^(a)
- No. 14. The Negroes of Farmville, Va.: A social study, by W. E. B. Du Bois, Ph. D.^(a)
Incomes, wages, and rents in Montreal, by Herbert Brown Ames, B. A.^(a)
- No. 15. Boarding homes and clubs for working women, by Mary S. Fergusson.^(a)
The trade union label, by John Graham Brooks.^(a)
- No. 16. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.
- No. 17. Brotherhood relief and insurance of railway employees, by E. R. Johnson, Ph. D.^(a)
The nations of Antwerp, by J. Howard Gore, Ph. D.^(a)
- No. 18. Wages in the United States and Europe, 1870 to 1898.^(a)
- No. 19. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.^(a)
Mutual relief and benefit associations in the printing trade, by W. S. Waudby.^(a)
- No. 20. Conditions of railway labor in Europe, by Walter E. Weyl, Ph. D.
- No. 21. Pawnbroking in Europe and the United States, by W. R. Patterson, Ph. D.
- No. 22. Benefit features of American trade unions, by Edward W. Bemis, Ph. D.^(a)
The Negro in the black belt: Some social sketches, by W. E. B. Du Bois, Ph. D.^(a)
Wages in Lyon, France, 1870 to 1896.^(a)
- No. 23. Attitude of women's clubs, etc., toward social economics, by Ellen M. Henriotin.^(a)
The production of paper and pulp in the U. S., from January 1 to June 30, 1898.^(a)
- No. 24. Statistics of cities.^(a)
- No. 25. Foreign labor laws: Great Britain and France, by W. F. Willoughby.^(a)
- No. 26. Protection of workmen in their employment, by S. D. Fessenden.^(a)
Foreign labor laws: Belgium and Switzerland, by W. F. Willoughby.^(a)
- No. 27. Wholesale prices: 1890 to 1899, by Roland P. Falkner, Ph. D.^(a)
Foreign labor laws: Germany, by W. F. Willoughby.^(a)
- No. 28. Voluntary conciliation and arbitration in Great Britain, by J. B. McPherson.^(a)
System of adjusting wages, etc., in certain rolling mills, by J. H. Nutt.^(a)
Foreign labor laws: Austria, by W. F. Willoughby.^(a)
- No. 29. Trusts and industrial combinations, by J. W. Jenks, Ph. D.
The Yukon and Nome gold regions, by S. C. Dunham.
Labor Day, by Miss M. C. de Graffenried.

- No. 30. Trend of wages from 1891 to 1900.
Statistics of cities.
Foreign labor laws: Various European countries, by W. F. Willoughby.
- No. 31. Betterment of industrial conditions, by V. H. Olmsted.
Present status of employers' liability in the U. S., by S. D. Fessenden.
Condition of railway labor in Italy, by Dr. Luigi Einaudi.
- No. 32. Accidents to labor as regulated by law in the U. S., by W. F. Willoughby.
Prices of commodities and rates of wages in Manila.
The Negroes of Sandy Spring, Md.: A social study, by W. T. Thom, Ph. D.
The British workmen's compensation act and its operation, by A. M. Low.
- No. 33. Foreign labor laws: Australasia and Canada, by W. F. Willoughby.
The British conspiracy and protection of property act and its operation, by A. M. Low.
- No. 34. Labor conditions in Porto Rico, by Azel Ames, M. D.
Social economics at the Paris Exposition, by Prof. N. P. Gilman.
The workmen's compensation act of Holland.
- No. 35. Cooperative communities in the United States, by Rev. Alexander Kent.
The Negro landholder of Georgia, by W. E. B. Du Bois, Ph. D.
- No. 36. Statistics of cities.
Statistics of Honolulu, H. I.
- No. 37. Railway employees in the United States, by Samuel McCune Lindsay, Ph. D.^(a)
The Negroes of Litwalton, Va.: A social study of the "Oyster Negro," by William Taylor Thom, Ph. D.^(a)
- No. 38. Labor conditions in Mexico, by Walter E. Weyl, Ph. D.
The Negroes of Cinclare Central Factory and Calumet Plantation, La., by J. Bradford Laws.
- No. 39. Course of wholesale prices, 1890 to 1901.
- No. 40. Present condition of the hand-working and domestic industries of Germany, by Henry J. Harris, Ph. D.
Workmen's compensation acts of foreign countries, by Adna F. Weber.
- No. 41. Labor conditions in Cuba, by Victor S. Clark, Ph. D.
Beef prices, by Fred C. Croxton.
- No. 42. Statistics of cities.^(a)
Labor conditions of Cuba.^(a)
- No. 43. Report to the President on anthracite coal strike, by Carroll D. Wright.^(a)
- No. 44. Factory sanitation and labor protection, by C. F. W. Doehring, Ph. D.
- No. 45. Course of wholesale prices, 1890 to 1902.
- No. 46. Report of Anthracite Coal Strike Commission.
- No. 47. Report of the Commissioner of Labor on Hawaii.
- No. 48. Farm colonies of the Salvation Army, by Commander Booth Tucker.
The Negroes of Xenia, Ohio, by Richard R. Wright, jr., B. D.
- No. 49. Cost of living.
Labor conditions in New Zealand, by Victor S. Clark, Ph. D.
- No. 50. Labor unions and British industry, by A. Maurice Low.^(a)
Land values and ownership in Philadelphia, by A. F. Davies.^(a)
- No. 51. Course of wholesale prices, 1890 to 1903.
The union movement among coal-mine workers, by Frank J. Warne, Ph. D.
- No. 52. Child labor in the United States, by Hannah R. Sewall, Ph. D.
- No. 53. Wages and cost of living.
- No. 54. The working of the United States Bureau of Labor, by Carroll D. Wright.
Bureaus of statistics of labor in the United States, by G. W. W. Hanger.
Bureaus of statistics of labor in foreign countries, by G. W. W. Hanger.
The value and influence of labor statistics, by Carroll D. Wright.
Strikes and lockouts in the United States, 1881 to 1900, by G. W. W. Hanger.
Wages in the United States and Europe, 1890 to 1903, by G. W. W. Hanger.
Cost of living and retail prices in the United States, 1890 to 1903, by G. W. W. Hanger.
Wholesale prices in the United States, 1890 to 1903, by G. W. W. Hanger.
Housing of the working people in the United States by employers, by G. W. W. Hanger.
Public baths in the United States, by G. W. W. Hanger.
Trade and technical education in the United States.
Hand and machine labor in the United States.
Labor legislation in the United States, by G. A. Weber.
Labor conditions in Hawaii.

- No. 55. Building and loan associations in the U. S., by G. W. W. Hanger. (a)
Revival of handicrafts in America, by Max West, Ph. D. (a)
- No. 56. Influence of trade unions on immigrants, by Carroll D. Wright.
Labor conditions in Australia, by Victor S. Clark, Ph. D.
- No. 57. Course of wholesale prices, 1890 to 1904.
Street railway employment in the United States, by Walter E. Weyl, Ph. D.
State cooperative accident insurance fund of Maryland.
- No. 58. Labor conditions in the Philippines, by Victor S. Clark, Ph. D.
Labor conditions in Java, by Victor S. Clark, Ph. D.
The new Russian workmen's compensation act, by I. M. Rubinow.
- No. 59. Wages and hours of labor in manufacturing industries, 1890 to 1904.
Retail prices of food, 1890 to 1904.
Laws relating to child labor in European countries.
- No. 60. Government industrial arbitration, by Leonard W. Hatch, A. M.
- No. 61. Labor conditions in Porto Rico, by Walter E. Weyl, Ph. D. (a)
Early organizations of printers, by Ethelbert Stewart. (a)
- No. 62. Municipal ownership in Great Britain, by Frederic C. Howe, Ph. D. (a)
Conciliation in the stove industry, by John P. Frey and John R. Commons. (a)
Laws relating to the employment of children in the United States. (a)
- No. 63. Course of wholesale prices, 1890 to 1905.
- No. 64. Conditions of living among the poor, by S. E. Forman.
Benefit features of British trade unions, by Walter E. Weyl, Ph. D.
- No. 65. Wages and hours of labor in manufacturing industries, 1890 to 1905. (a)
Retail prices of food, 1890 to 1905. (a)
- No. 66. Third report of the Commissioner of Labor on Hawaii.
- No. 67. Conditions of entrance to the principal trades, by Walter E. Weyl,
Ph. D., and A. M. Sakolski, Ph. D. (a)
Cost of industrial insurance in the District of Columbia, by S. E.
Forman. (a)
- No. 68. Free public employment offices in the United States, by J. E. Conner,
Ph. D. (a)
Laws of foreign countries relating to employees on railroads, by Lindley
D. Clark, A. M., LL. M. (a)
- No. 69. Wholesale prices, 1890 to 1906.
- No. 70. The Italian on the land: A study in immigration, by Emily Fogg
Meade. (a)
A short history of labor legislation in Great Britain, by A. Maurice
Low. (a)
The British workmen's compensation acts, by Launcelot Packer, B. L. (a)
- No. 71. Wages and hours of labor in manufacturing industries, 1890 to 1906. (a)
Retail prices of food, 1890 to 1906. (a)
- No. 72. Italian, Slavic, and Hungarian unskilled immigrant laborers in the
United States, by Frank J. Sheridan.
Economic condition of the Jews in Russia, by I. M. Rubinow.
- No. 73. Laws relating to the employment of women and children.
Laws relating to factory inspection and the health and safety of em-
ployees.
- No. 74. The legal liability of employers for injuries to their employees, in the
United States, by Lindley D. Clark, A. M., LL. M.
Workmen's compensation acts of foreign countries.
- No. 75. Wholesale prices, 1890 to 1907.
Industrial hygiene, by George M. Kober, M. D.
- No. 76. The Canadian Industrial Disputes Investigation Act of 1907, by Victor
S. Clark, Ph. D.
What is done for the unemployed in European countries, by W. D. P.
Bliss.
Retail prices of food, 1890 to 1907.
Cost of living of the working classes in the principal industrial towns
of Great Britain.
- No. 78. Industrial accidents, by Frederick L. Hoffman.
Mexican labor in the United States, by Victor S. Clark, Ph. D.
Cost of living of the working classes in the principal industrial towns of
Germany.

WOMAN AND CHILD WAGE-EARNERS IN GREAT BRITAIN

DEPARTMENT OF COMMERCE AND LABOR

BULLETIN
OF THE
BUREAU OF LABOR

No. 80—JANUARY, 1909

ISSUED EVERY OTHER MONTH



WASHINGTON
GOVERNMENT PRINTING OFFICE
1909

REPORTS PUBLISHED BY THE BUREAU OF LABOR.

ANNUAL.

1886. First,	Industrial Depressions (out of print).....	496 pages
1886. Second,	Convict Labor (out of print).....	612 "
1887. Third,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1886) (out of print).....	1172 "
1888. Fourth,	Working Women in Large Cities (out of print).....	631 "
1889. Fifth,	Railroad Labor (out of print).....	888 "
1890. Sixth,	Cost of Production: Iron, Steel, Coal, etc. (out of print).....	1404 "
1891. Seventh,	Cost of Production: The Textiles and Glass (2 vols.) (out of print).....	2048 "
1892. Eighth,	Industrial Education (out of print).....	707 "
1893. Ninth,	Building and Loan Associations (out of print).....	719 "
1894. Tenth,	Strikes and Lockouts (Jan. 1, 1887, to June 30, 1894) (2 vols.) (out of print).....	1909 "
1895-96. Eleventh,	Work and Wages of Men, Women, and Children (out of print).....	871 "
1897. Twelfth,	Economic Aspects of the Liquor Problem (out of print)	275 "
1898. Thirteenth,	Hand and Machine Labor (2 vols.) (out of print)....	1604 "
1899. Fourteenth,	Water, Gas, and Electric-light Plants under Private and Municipal Ownership (out of print).....	983 "
1900. Fifteenth,	A Compilation of Wages in Commercial Countries from Official Sources (2 vols.).....	1642 "
1901. Sixteenth,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1900) (out of print).....	1053 "
1902. Seventeenth,	Trade and Technical Education (out of print).....	1333 "
1903. Eighteenth,	Cost of Living and Retail Prices of Food (out of print).	865 "
1904. Nineteenth,	Wages and Hours of Labor.....	976 "
1905. Twentieth,	Convict Labor.....	794 "
1906. Twenty-first,	Strikes and Lockouts (Jan. 1, 1881, to Dec. 31, 1905)..	979 "
1907. Twenty-second,	Labor Laws of the United States.....	1562 "

SPECIAL.

1889. First,	Marriage and Divorce (out of print).....	1074 pages
1892. Second,	Labor Laws of the United States (second edition, revised, 1896) (out of print).....	1383 "
1893. Third,	Analysis and Index of all Reports issued by Bureaus of Labor Statistics in the United States prior to Nov. 1, 1892 (out of print) (a).....	376 "
1893. Fourth,	Compulsory Insurance in Germany, etc. (out of print)	370 "
1893. Fifth,	The Gothenburg System of Liquor Traffic (out of print)	253 "
1893. Sixth,	The Phosphate Industry of the United States (with maps and illustrations) (out of print).....	145 "
1894. Seventh,	The Slums of Baltimore, Chicago, New York, and Philadelphia (out of print).....	620 "
1895. Eighth,	The Housing of the Working People (with plans and illustrations) (out of print).....	461 "
1897. Ninth,	The Italians in Chicago (out of print).....	409 "
1904. Tenth,	Labor Laws of the United States (out of print).....	1413 "
1904. Eleventh,	Regulation and Restriction of Output (out of print)..	932 "
1905. Twelfth,	Coal Mine Labor in Europe (out of print).....	547 "

a New edition (1902) available for distribution.

DEPARTMENT OF COMMERCE AND LABOR

BULLETIN

OF THE

BUREAU OF LABOR

No. 80—JANUARY, 1909

ISSUED EVERY OTHER MONTH



WASHINGTON
GOVERNMENT PRINTING OFFICE
1909



Pres. C. W. Eliot.

CONTENTS.

	Page.
Woman and child wage-earners in Great Britain, by Victor S. Clark, Ph. D.:	
Introduction.....	1, 2
The factory laws.....	2-7
Administration of the factory laws.....	8-11
Proposed amendments.....	11, 12
The half-time system.....	12-23
Employment of children outside of factories and workshops.....	23-27
Street trading by children.....	27-36
Outwork, sweating, and the minimum wage.....	36-47
Social and economic effect of legislation regulating the employment of women and children.....	47
Effect of provisions shortening hours of work.....	48-53
Influence of the factory acts upon the wages of women and children.....	53-65
Influence of the factory acts upon distribution of employment among men, women, and children.....	65-71
Influence of the factory acts upon the general welfare of workers.....	71-81
Influence of the factory acts upon industry.....	81-83
Conclusion.....	83-85
Minimum Wage Act, 1908, New South Wales.....	86, 87
Digest of recent reports of state bureaus of labor statistics:	
Illinois—Fourteenth Biennial Report: Working women in factories.....	88
Maryland—Sixteenth Annual Report: The child-labor law and its enforcement—Inspection of clothing and other manufactures—Free employment agency—Cost of living—Labor unions—Strikes and lockouts.....	89-91
New Hampshire—Seventh Biennial Report: Leading industries—Statistics of manufactures.....	91, 92
North Carolina—Twenty-first Annual Report: Condition of farmers—Condition of the trades—Miscellaneous factories—Cotton, woolen, and knitting mills—Furniture factories—Railroad employees.....	92-95
Digest of recent foreign statistical publications:	
Canada—Report of the Department of Labor: Labor unions—Conciliation and arbitration—Fair wages schedules—Labor disputes—Industrial accidents.....	96, 97
Germany—	
Report of Bavarian Statistical Bureau on cooperative societies in Bavaria.....	98-100
Report on conditions of employment and the wages of employees in Magdeburg.....	100, 101
Great Britain—	
Report of the Chief Inspector of Factories and Workshops for the year 1907.....	101-103
Report on compensation for industrial diseases.....	103, 104
Reports on home work by select committees appointed in 1907 and 1908.....	104-110

	Page.
Digest of recent foreign statistical publications—Concluded.	
Great Britain—Concluded.	
Report on wages boards and on the Industrial Conciliation and Arbitration Acts of Australia and New Zealand.....	110, 111
Italy—	
Report of the Bureau of Labor on employment of women in industry.	111-114
Report of the Bureau of Labor on the manufacture of sulphur matches.	114-116
Spain—Report of the Institute of Social Reforms on the housing problem.	116-123
Decisions of courts affecting labor:	
Decisions under statute law.....	124-163
Boycott—injunction—contempt—evidence (<i>The Buck Stove and Range Co. v. The American Federation of Labor</i>).....	124-138
Combinations to fix prices—restraint of trade—pools and trusts—construction and application of statute (<i>Rohlf v. Kasemeier et al.</i>)....	138-142
Employment of children—age limit—cleaning moving machinery (<i>Sullivan v. Hanover Cordage Co.</i>).....	142, 143
Employment of children—certificate of age—violation of statute—persons liable (<i>People v. Taylor</i>).....	143, 144
Hours of labor of employees on railroads—regulation of commerce—state and federal statutes—constitutionality (<i>State v. Missouri Pacific Ry. Co.</i>).....	144-146
Hours of labor of employees on railroads—regulation of commerce—state and federal statutes—validity (<i>State v. Chicago, Milwaukee and St. Paul Ry. Co.</i>).....	146-150
Hours of labor on public works—eight-hour law—constitutionality of statute (<i>People ex rel. Williams Engineering and Contracting Co. v. Metz</i>).....	150-155
Interference with employment—damages for procuring discharge—measure—grounds—rights of labor organizations (<i>Carter v. Oster et al.</i>)	155-161
Labor organizations—boycotts—use of mails to defraud (<i>United States v. Raish et al.</i>).....	161-163
Decisions under common law.....	163-186
Contract of employment—enforcement—restraint of trade—disclosure of secret processes (<i>Taylor Iron and Steel Co. v. Nichols et al.</i>).....	163-167
Employers' liability—course of employment—eating lunch on premises (<i>Riley v. Cudahy Packing Co.</i>).....	167, 168
Employers' liability—course of employment—leaving place of work for personal ends (<i>Wilson v. Chesapeake and Ohio Ry. Co.</i>).....	168, 169
Employers' liability—railroad companies—negligence—contributory negligence—proximate cause (<i>Dortch v. Atlantic Coast Line R. R. Co.</i>)	169-171
Employers' liability—res ipsa loquitur—application of doctrine (<i>La Bee v. Sultan Logging Co.</i>).....	171-173
Employment of labor—term—evidence—breach by employer—damages (<i>Maynard v. Royal Worcester Corset Co.</i>).....	173-176
Labor organizations—procuring expulsion of members—conspiracy—liability of one party only—damages (<i>St. Louis Southwestern Ry. Co. v. Thompson</i>).....	176-180
Labor organizations—strikes—legality—fines on members—intimidation of employees—employers' rights—injunction (<i>L. D. Willcutt and Sons Co. v. Bricklayers' Benevolent and Protective Union No. 3 et al.</i>)	180-186
Laws of various States relating to labor, enacted since January 1, 1908....	187-194
Cumulative index of labor laws and decisions relating thereto.....	195

BULLETIN
OF THE
BUREAU OF LABOR.

No. 80.

WASHINGTON.

JANUARY, 1909.

WOMAN AND CHILD WAGE-EARNERS IN GREAT BRITAIN.

BY VICTOR S. CLARK, PH. D.

INTRODUCTION.

Because the modern factory system began in Great Britain and, together with material blessings, brought social evils, the first factory laws were enacted in that country. Since then constant conflict has continued between the destructive forces of untrammelled industry, sacrificing its servants to its dominant end, production, and the protective intervention of society, staying those forces in the interest of humanity. This conflict has resulted in a highly developed system of factory legislation, based on over a century of experience. But many evils still afflict workers for which remedies remain to be discovered. Recent enactments and projected laws do not stop at the factory and workshop, but seek to correct abuses in the very homes of the operatives. A complete view of the legislation affecting wage-earners, therefore, must regard not only past measures, but also those in prospect, and the justification of the latter in existing evils. In a progressive country social legislation is never static, and tendencies are as illuminating as attainments. This is particularly true of Great Britain, where advanced factory regulation has prepared the way for progress in a new direction.

Although British experience with factory laws is so extensive and long continued, and the general social effect of these laws is understood, their detailed economic effect has not yet been fully studied. It might be argued that these laws have recorded rather than caused the improvement in the condition of factory workers during the last century. The question remains open whether they have checked or accelerated the progress of particular industries. No searching anal-

ysis of the influence of the factory acts in these directions has yet been made, and statistical data for a complete demonstration of this influence are now lacking. But there have been partial investigations, both public and private, of several of the problems here suggested. The literature, documentary and otherwise, that has thus grown up around this subject in Great Britain, is the most valuable that we have illustrating the effect of laws upon social and industrial conditions.

THE FACTORY LAWS.

The first English factory act was passed in 1802, to protect the health and morals of parish apprentices employed in cotton and woolen mills. It marked the transition from the old regulation of trade apprenticeship to the new factory legislation. In 1819 a second law prohibited the employment in cotton mills of any children under 9 years of age and limited the working hours of children under 16 years of age to 12 a day. The act of 1825 retained 16 years as the age of those whose hours of work were thus limited, but in 1831 this provision was extended to all young persons under 18, and night work by persons under 21 was forbidden. The act of 1833 extended these regulations to all textile industries, and required that children under 13 should be employed only 48 hours in one week and not more than 9 hours in one day, and factory inspectors were appointed to enforce the law. In certain respects, therefore, the laws regulating the employment of children were more advanced in Great Britain 75 years ago than they are in some American States at the present time.

The effect of these acts was to cause women to be substituted for children in low-paid occupations. Many arguments, both physiological and moral, were urged against unregulated female employment, especially at night, and in 1844 women were brought under the provisions hitherto applying to young persons.

For 25 years prior to 1850 there was agitation in England in favor of a 10-hour day for factory women and children. In 1847 such a law was passed, but employers were allowed so much latitude in selecting the period within which the 10 hours should be worked as largely to nullify its benefit. Three years later the working hours were increased to 10½, but required to be continuous except for meals. The next 20 years saw little addition to the law, but witnessed its extension to nearly all manufacturing establishments, and increasing efficiency in its administration. In 1874 the hours of females and children employed in textile mills were reduced to 56½ per week. From this time opinion began to be divided as to the desirability of laws limiting the working conditions of women. A party supported by some women workers maintained that these regulations made employers

prefer men in occupations previously filled by women, and thus drove the latter out of positions. Recently woman suffragists have denied the right of a parliament elected exclusively by male voters to make regulations applying only to women. There seems to be more opposition from these sources than from employers to the further regulation of women's work in Great Britain. Meantime the act was extended to workshops, and, partly on account of the opposition to restricting female employment, was given only limited application to women workers in shops where no children were employed, while in domestic workshops, employing no persons outside of members of the family, women were entirely freed from regulation. This was no boon to the latter; for these exempted shops have since proved the chief seats of long hours, low wages, insanitary conditions, and all the other evils of sweating.

The following table, compiled and extended from one published in the Journal of the Royal Statistical Society in 1902, gives in brief form the main provisions of the various laws affecting hours of work:

YEAR OF PASSAGE AND MAIN PROVISIONS AFFECTING HOURS OF WORK, OF FACTORY ACTS OF GREAT BRITAIN.

Year.	Industries affected.	Operatives affected.	Details.
1802....	Cotton.....	Apprentices.....	12-hour day, between 6 a. m. and 9 p. m.; night work regulated.
1819....	Cotton.....	Children.....	Minimum age, 9 years; children 9 to 16 years limited to 12 hours a day.
1825....	Cotton.....	Children.....	Saturday's work limited to 9 hours, before 4.30 p. m.; weekly hours, 69. Work day from 5 a. m. to 8 p. m.
1831....	Cotton.....	Children, 9 to 13; young persons, 13 to 18 years.	Prohibited night work for employees under 21; children and young persons limited to 12 hours daily and 69 weekly.
1833....	Textiles.....	Children, 9 to 13; young persons, 13 to 18 years.	Children limited to 9 hours daily, 48 weekly; young persons remain 69 weekly, 5.30 a. m. to 8.30 p. m. Extended to all textiles.(a)
1844....	Textiles.....	Children, young persons, and women.	Children half-time system, 6½ hours daily or 10 hours for 3 alternate days. Women to work same hours as young persons.
1845....	Print works.....	Children, young persons, and women.	Extension to print works.
1847....	Textiles.....	Young persons and women..	"Ten Hours Act;" 11 hours daily and 63 weekly from July 1, 1847; 10 hours daily and 58 weekly from July 1, 1848.
1850....	Textiles.....	Young persons and women..	Hours 10½ daily, 60 weekly, between 6 a. m. and 6 p. m. or 7 a. m. and 7 p. m. and to 2 p. m. Saturdays.
1853....	Textiles.....	Children.....	Extension of act of 1850 to children.
1860....	Bleaching and dye works.	Children, 8 to 13; young persons, 13 to 18 years; women.	Except bleaching in open air; 12-hour day, between 6 a. m. and 8 p. m. and to 4.30 p. m. Saturdays.
1861....	Hosiery and lace...	Children, 8 to 13; young persons, 13 to 18 years; women.	Extends acts of 1850 and 1853, except youths 16 to 18 may work 9 hours between 4 a. m. and 10 p. m.
1864....	Fustian cutting, cartridge making, pottery.	Children, young persons, and women.	Extends acts previously applying to textiles.
1867....	Workshops and factories.	Children, young persons, and women.	Extends act to any premises constituting one trade establishment employing 50 or more in manufacturing. Hours in workshops regulated.
1870....	Print, bleach, and dye works.	Children and young persons.	Open-air work regulated.
1871....	Brick and tile works.	Children and young persons.	Children under 10 years and females under 16 prohibited.

a Factory inspectors were first appointed in 1834.

YEAR OF PASSAGE AND MAIN PROVISIONS AFFECTING HOURS OF WORK, OF FACTORY ACTS OF GREAT BRITAIN—Concluded.

Year.	Industries affected.	Operatives affected.	Details.
1874....	Textiles.....	Children 10 to 13 years, young persons 13 to 18 years, and women.	Employment of children under 10 forbidden. Children's hours as before, but not to be employed Saturdays if working over 56 hours any day of the week. Hours 56½ weekly. After Jan. 1, 1876, minimum "full time" age 14 years, unless evidence of proficiency in school.
1878....	Textiles.....	Children, young persons, and women.	Children 6½ daily, or 10 hours for 3 alternate days, between 6 or 7 a. m. and 1 p. m.; or between 1 p. m. and 6 or 7 p. m. On Saturday work to end at 1 p. m.
	Nontextile.....	Children, young persons, and women.	Children same as in textile mills, but to end Saturdays 2 p. m. Young persons and women 10½ hours, 6 a. m. to 6 p. m., 7 a. m. to 7 p. m., or 8 a. m. to 8 p. m. Exceptions. Saturdays end at 2 p. m.
	Workshops.....	Women only.....	Workshops not employing children or young persons, 10½-hour day, between 6 a. m. and 9 p. m. Saturdays till 4 p. m. Other workshops same as nontextile factories.
	Domestic work-shops.	Children and young persons.	Children as in nontextile factories; young persons as in workshops; women not regulated.
1891....	Domestic work-shops.	Children only.....	Minimum age for half timers raised from 10 years to 11 years.
1895....	Factories and workshops.	Children, young persons, and women.	Young persons' overtime prohibited; women's overtime limited to 2 hours a day, 3 days a week, 30 days a year, with exceptions. Regulation extended to laundries.
1901....	Factories and workshops.	Children, young persons, and women.	No child under 12 to be employed. Many detailed provisions governing hours of employment in particular industries and establishments. Period of employment in textile factories reduced 1 hour Saturdays.

The last amendments have reduced the hours of work in textile factories to 55½ a week, and have established numerous minor but important regulations, relating especially to sanitation and dangerous trades. Meantime each year's experience has resulted in more efficient administration, and more liberal provision has been made for the enforcement of the law.

The present acts apply in many respects to men in common with women and children, and are enforced equally in factories where only adult males are employed. Such provisions, especially those relating to sanitation, fire protection, and guarding dangerous machinery and processes, do not belong to our topic, though their benefit is perhaps most felt by young persons and delicate female workers. The demands of health, comfort, and decency are as well considered in most British factories as in the homes of the operatives, and in many cases working surroundings are superior to those of the domestic circle.

The measures applying exclusively to woman and child factory workers, which therefore embody Great Britain's answer to the problem of their particular welfare, relate chiefly to time and duration of continuous labor and to employment in injurious or dangerous trades. Other regulations are mostly subordinate to these two main matters.

The time of employment of women and children varies, and in case of children it is conditioned by age and education.

A child may begin working in a factory or workshop, or above ground at a mine, when 12 years old, providing (1) that it secures a certificate of physical fitness from an official examining surgeon, (2) that it has passed in school a certain required standard set by the local authorities, and (3) that it continues to attend school regularly half time. Half timers may work either alternate days or in morning or afternoon shifts, attending school the remaining days or shifts. In the latter case the shifts must be alternated each successive week. At 13 years old a child with the proper physical certificate may begin working full time in a factory, or underground in a mine, provided it has passed the fifth grade or has attended school five full years of "350 attendances" since it was 5 years old. Otherwise a child remains a half timer until 14. At 14 children become "young persons" in the eyes of the British law and remain so until 18 years old. There is no further educational requirement, but in order to acquire this status they must be reexamined and must secure a new physical certificate from the certifying surgeon. In textile factories young persons may work, subject to the legal meal intervals, from 6 or 7 a. m. to 6 or 7 p. m., respectively, so long as the aggregate hours do not exceed $55\frac{1}{2}$ weekly, and in other factories either the same hours or from 8 a. m. to 8 p. m., and not more than 60 hours in one week. There is a short day Saturday. Women are in most cases subject to the same regulations as young persons, except that in certain industries they may work a limited amount of overtime. When working in his family, termed by the law in a "domestic workshop," a child may be employed only half time, and a young person may work only between 6 a. m. and 9 p. m., ordinary days, with $4\frac{1}{2}$ hours of intermission, and from 6 a. m. to 4 p. m. on Saturdays, with $2\frac{1}{2}$ hours' intermission. Women in domestic workshops may work the hours they please any day but Sunday.

In textile factories 2 hours of the 12 must be allowed for meals, and in other factories and in shops $1\frac{1}{2}$ hours; and in these two classes of factories, respectively, the meal hours must not be more than $4\frac{1}{2}$ or 5 hours apart.

Overtime for children and young persons hardly exists in Great Britain, the few exceptions being in seasonal occupations or where perishable products are handled. Women may work overtime, when notice has been given to the factory inspector; but not later than 10 p. m., nor more than 2 hours a day, nor more than 3 days in one week, nor more than 30 days in any year.

These are in substance, omitting minor details, the regulations to prevent excessively protracted work for women and children. Over-

work, however, depends upon intensity as well as time. Intensity is unregulated. The act is sometimes evaded, especially by small employers; and some factories send away work to be done by employees illegally at their homes outside of factory hours. On the other hand, in many establishments women and children do not work the full legal time; so that their average hours in all factories are probably less than the maximum allowed by law.

Employers are forbidden "knowingly" to employ a female operative within 4 weeks after childbirth; but it is so difficult to secure convictions under this provision, because employers can plead ignorance of the facts, that evasions frequently occur.

The jurisdiction of the factory act is very wide, applying to all establishments within the definition without regard to number of employees, including laundries and bakeries, and to workshops where either women or children are employed. Building operations, wharves, warehouses, and railway sidings are subject to the law only as to the reporting of accidents. Establishments where dangerous trades or processes are carried on are required to observe, in addition to the ordinary provisions of the act, such rules for the protection of employees as may be issued by the home secretary. These factories include all those engaged in the manufacture of lead colors, or where lead dye, glaze, decoration, or enamel is used, match factories using phosphorus, places where poisonous or explosive chemicals are manufactured or used, shops for the mixing and casting of brass or where files are cut by hand, establishments handling or employing in manufacture wools and hairs likely to carry anthrax contagion—such as hat factories, some spinning and weaving factories, and tanneries—houses bottling aerated waters, and places where derricks and locomotives are used in immediate connection with a manufacturing establishment. Many of these special regulations do not affect women and only incidentally affect boys; but in some industries the employment of children, young persons, and women is either greatly restricted or altogether forbidden. Women are not allowed to work in white-lead works, and no longer are employed in certain occupations in brass foundries. Children may not operate or clean dangerous machinery, and young persons and women may not clean such machinery while in motion. Children shall not be employed to carry too heavy burdens, or be otherwise employed so as excessively to tax their strength or attention. In granting a physical certificate to a child beginning work as a half timer or to a young person, the certifying surgeon may prescribe the particular work the child is capable of doing without injury, and may make the certificate authorize the child's employment only in that class

of work. A factory inspector may at any time suspend or annul the physical certificate of a child or young person, either for violation of its provisions, or because the child's health or strength appears to him unequal to the tasks prescribed or to any further factory work. The child may then be reemployed only after a new physical examination and the issuance of a new certificate by the certifying surgeon.

Regulations governing home work and domestic workshops apply peculiarly to women and children. A domestic workshop is defined by law as "a private house, room, or place, which though used as a dwelling, is by reason of the work carried on there a factory or a workshop, as the case may be, within the meaning of this act, and in which neither steam, water, nor other mechanical power is used in aid of the manufacturing process carried on there, and in which the only persons employed are members of the same family dwelling there." Since no number of workers is specified, this brings within the purview of the law most outworkers, who receive clothing and other materials from a factory for making up. If any outworker uses assistance, whether paid or not, outside his immediate family dwelling with him, his place becomes a workshop under the broader definition, and is subject to still more complete supervision. Persons who give out work in certain industries must keep a list of the names and addresses of outworkers, and forward copies of these twice a year to the local authority and, on demand, to the factory inspector. Though this is primarily a sanitary regulation, and an employer is required to cease giving out work to places where conditions may endanger public health, incidentally such shops are thus brought under stricter general control. This not only enables greater supervision over the hours of work and the age of employment, but also helps in enforcing other requirements of the act which, though in principle applying equally to all workers, in practice are chiefly a safeguard to women and children. These are the provisions prohibiting excessive fines or deductions for imperfect work or damaged materials; payment in goods or charges for extras, such as light and heat, and those compelling the employer to give "particulars," that is, to allow a pieceworker an itemized account of the price to be paid for each kind of work.

Employment in mines and upon railways is regulated by separate acts. There are also special laws, relating more particularly to employment in stores and shops and the work of children outside of factories, that affect the condition of saleswomen and younger wage-earners. School ordinances and other local regulations also influence the condition of the latter.

ADMINISTRATION OF THE FACTORY LAWS.

The various laws regulating conditions of work in Great Britain are enforced by four groups of inspectors—factory inspectors, mines inspectors, and railway inspectors, all of whom are officials of the central Government, and public health officers and other inspectors appointed by local authorities. The factory, mine, and railway inspectors have distinct spheres of jurisdiction; but all of them, and especially the factory inspectors, may be called upon to cooperate with the officers of the local government. Laws affecting women and children employed in commercial, as distinct from industrial, pursuits are for the most part administered solely by the local authorities. Such, for instance, are the Seats for Shop Assistants Act, 1899; the Shop Hours Act, 1892 and 1904, and the Employment of Children Act, 1903. Municipal officers cooperate with factory inspectors principally in sanitation and education. Local building ordinances govern the construction and arrangement of factories and workshops; but these must conform also to the requirements of the factory laws as to space, light, ventilation, fire protection, and general sanitation. The relations between factory inspectors and local health officers are so regulated that if the latter neglect to enforce acceptable regulations in the matters subject to their special jurisdiction the factory inspector, upon authorization by the secretary of state, may himself issue and enforce the necessary orders. He can recover the expense from the local government. The factory inspector may require the assistance of the city police to enforce any provision of the act. Local educational authorities prescribe the standard of school advancement for half-time certificates, and may forbid half time altogether, as in certain cities (notably London) they have done. They also work together with the factory department in enforcing the compulsory-education law.

There are now 200 factory inspectors, including office staffs. Under their scrutiny are five and a half million employees and over a quarter of a million factories and workshops. Assisting these are the local inspectors mentioned and more than 2,000 certifying surgeons. These surgeons are not salaried, but receive a fee from the employer for each prospective worker examined. Unless a factory has fewer than 5 employees the physical examination must be at the factory itself, and is issued for employment in that factory, and, as just stated, for certain occupations. Therefore, usually no question can arise as to the identity of the child holding the certificate; and since the surgeon has nearly the same rights of visitation as the factory inspector, he can satisfy himself as to sanitary conditions and protection from dangerous machinery in the places where the child will work.

In 1908 the number of factory inspectors was increased from 165 to 200, and it is still thought inadequate. The majority of the male inspectors are assigned, either in charge or as assistants, to definite districts, where their work is controlled by the chief inspector or by one of his supervising assistants. Lady inspectors are usually sent to such portions of the field as require their work, according to the emergencies of the service. Experienced inspectors are detailed to make special investigations when information concerning some particular district or industry is required. In addition, the Government provides special expert inspectors for textile industries, electrical machinery, and dangerous trades, besides a medical inspector. There are also some 70 sanitary inspectors, nearly half of whom are women, whose duties are solely under the Factory and Workshop Act. About 40 mine inspectors, under a chief inspector, enforce prescribed conditions of employment in mines. Over 170 local inspectors are either wholly or partly engaged in enforcing the Shop Hours Act and the law requiring seats for shop assistants.

Most of the male factory inspectors are men who previously to entering this work were practically familiar with manufacturing, while several of the female inspectors have been drawn from the ranks of social workers. Of the men on the staff in 1907, 49 were engineers, 20 had been manufacturers or managers of works, and 20 were scientists or teachers of science or of engineering. Seven were university men, 16 had been transferred from other government departments, 24 had been either workingmen in factories or trade-union officials, and 11 had held clerical positions. The army furnished 2 inspectors and the law 1. Of the lady inspectors 5 had previously been in local sanitary departments.

There is no cooperation, except voluntary, between trade unions and the factory inspectors; but the labor party in Parliament, largely representing these organizations, naturally interests itself especially in the provisions and the administration of the factory laws. The civil-service requirements are said to prevent workingmen from securing appointments as inspectors, or after appointment from advancing to more responsible and better-paid positions. In 1907 among the former workingmen upon the staff the proportion of full inspectors to assistants was only a little over one-ninth the corresponding proportion among members from other callings. The weak point in the administration of the law, however, is not so much in the personnel or in the powers of inspectors as in the inadequate strength of the inspecting force. Omitting domestic workshops, which need as much attention as larger works, in 1906 the field force was able to visit each establishment registered under the act an average of 1.5 times. As some of these visits were made to domestic workshops, the average

number of times each factory was inspected was less than this. Moreover, special demands or convenience of opportunity caused two or more visits to be made to many works, while others escaped inspection altogether. Even with the increased force, each inspector available for field work must look after the welfare of nearly 30,000 workers—the population of a city. In Massachusetts, where there are separate inspectors for steam boilers and where local authorities enforce rather more provisions of the law than do the local authorities in Great Britain, there are more than ten times this number of inspectors in proportion to the workers to whom the law applies; and in some other Northern States the proportion seems to be larger than in Great Britain. But in our Southern States as yet there is practically no provision for enforcing by direct inspection the laws recently enacted in regard to woman and child workers. And in the United Kingdom the congestion of population and industries makes a relatively smaller force more adequate than it would be in America.

One proposal in England is to increase the powers and responsibilities of local sanitary inspectors, at the same time making them strictly subordinate in industrial inspection to the factory department, thus leaving the latter's inspectors free to concentrate attention on such matters as dangerous machinery and processes, hours of work, and wages. Some of the labor representatives, on the other hand, favor increasing the central at the expense of local supervision, and for this reason would greatly strengthen the inspecting staff. The uniform administration of the law is rendered more difficult where much is left to local action, and influences are more likely to come into play to prevent the rigid enforcement of some requirements. The general opinion seems to be that the value of the law is in proportion to the number of officers in the field to enforce it, and that its administration is best intrusted, in all main matters, to a single central authority.

The treatment of violations of the act is left to the discretion of inspectors. The application of a large number of special rules to a complicated industry results in many minor or inadvertent violations, which are dismissed with a caution. For an inspector to prosecute every offense detected would in a sense defeat his usefulness; for it would require him to spend so much time in court that he could not visit factories. Generally the cases taken before a magistrate are (a) repeated offenses, (b) offenses involving a contested point of law, or (c) where an example is made of one employer to check a tendency to disregard some provision of the law observed among several employers in the vicinity. Suits are brought in the police court, with the possibility of appeal. Before bringing a suit the inspector secures the authorization of the supervising inspector or the chief

inspector, and he prosecutes in his own name and may conduct his case without an attorney.

The number of prosecutions averages about 4,000 a year, with nearly 95 per cent of convictions and voluntary withdrawals. In 1907 the convictions were 4,211 out of 4,474 cases brought into court. The average fine inflicted upon offenders was 19s. 8d. (\$4.79). The law fixes minimum and maximum penalties for certain defined offenses and also in some cases a penalty for each day of default in carrying out the provisions of the act. The minimum penalty that may be inflicted is £1 (\$4.87) and applies to repeated offenses within 2 years for all classes of offenses except breach of regulations relating to cotton-cloth factories, where the minimum is £5 (\$24.33) for the first and £10 (\$48.67) for the second offense, and contract or payment contrary to the Truck Act, where it is £10 (\$48.67) for the second offense. The maximum penalty rises in some cases to £100 sterling (\$486.65). This is the fine for neglecting a regulation by which injury or death is caused, and does not bar civil action by the employee for damages or compensation. For disregarding important health or safety requirements an inspector may secure an order of court closing a factory or workshop until the bad conditions shall have been remedied; but such closing must be ordered only as a precaution against injury to workers, and not as a penalty for violating the act.

PROPOSED AMENDMENTS.

In Great Britain there is now no such opposition to factory legislation as still evidences itself in some parts of America. No employer or representative of employers was heard to criticise the act as a whole, and there was but mild objection to any of its details. Undoubtedly among smaller works and in the sweatshop districts one might encounter struggling proprietors competing with large manufacturers under the disadvantage of insufficient capital and amid uneconomic conditions, who see in the demands for modern sanitation and regulated employment extortions that foreshadow their own ruin. But these people are few and growing fewer, and do not make public opinion outside their class. The great main current of thought and sympathy among the mass of the nation, including both employers and workers, not only favors present regulations but is not averse to extending them.

The present tendency, as indicated by the more recent amendments, is to bring new and quasi-manufacturing industries—such as laundry work—under the law, and greatly to amplify the regulations governing dangerous trades. Apart from the constant agitation to increase the number of inspectors, which has just led to considerable results, there are three chief lines of amendment advocated by those who wish

to strengthen the law. One is to carry forward the general movement to shorten hours by reducing the weekly period of factory labor; the second is to abolish half time, thus doing away with what is called in England child labor by making the lowest age of beginners in shops and factories 14 years; and the third, and most important politically and economically, is to regulate sweating by establishing a legal minimum wage. The third proposal would introduce a hitherto unrecognized principle into British factory legislation.

The agitation for shorter hours is not so active as it would be were not labor unions, improved machinery, and the general transformation of industry bringing these about without further assistance from legislation. In many industries and establishments women and children are not at present employed the full hours allowed by law, because better results are obtained by a shorter working day. But during the recent boom in textiles some factories where piecework rates are paid and where employees are not always averse to evading the regulations, there is still "time cribbing," or running the machinery a trifle over the legal time, especially at meal intervals. The present depression will probably stop most of this for the time being, because there is not sufficient work to keep the mills going full hours.

THE HALF-TIME SYSTEM.

In Great Britain the sentiment of the general public and of many employers, and the official attitude of the labor party, are opposed to the labor of children under 14 years of age in factories and workshops, and so to the half-time system. This system grew up in the midst of the compromises that have characterized most factory legislation, and has never been justified by its own merits. On the other hand, some employers and many of the rank and file of workers, especially in Lancashire and in certain other textile districts, favor its retention. The attitude of the working people is based upon the real or assumed need of the children's wages to support the family, and to a less clearly expressed but equally widespread sentiment that what was good enough for the parent is good enough for the child. Employers use the argument that for spinning finer numbers of yarn, and possibly in some other occupations, children acquire the necessary skill only when they begin young. There are a few places, notably the jute mills of Dundee, where the survival of an industry in competition with foreign (in this case Indian) cheap labor is supposed to depend upon the employment of young children. The arguments against half time are the same as those against all child labor, and are reenforced by special considerations. The alternation of factory work and school attendance, particularly when this occurs on the same day, overtaxes most children—and in such a way

that the main loss of interest and attention is felt by the school work. The organization and discipline of the schools are embarrassed where some of the pupils attend but one session daily, and this in turn reacts on the welfare of the other pupils. The whole community thereby suffers, and probably the total loss is greater than any possible gain from the children's labor.

Inasmuch as the law permits only those children who have attended school regularly and who have acquired a certain standard of proficiency in school to work half time, stupid and slow children are debarred from this questionable privilege; therefore, the half timers should be mentally as well as physically a picked class. The almost unanimous testimony is that factory life soon removes them from this preferred position. To quote a leading physician of one of England's chief factory cities:

To every teacher the half timer is an unmitigated nuisance, and his presence in school an intellectual drag and a bad moral influence—the evil atmosphere of the mill very soon affecting him. If educated alongside the ordinary whole-day scholars, the curriculum of the whole school has to be curtailed to suit his possibilities, and wherever possible in large schools separate half-time classes are established, with a view to minimizing the effects of this intellectual handicapping and the insidious moral contamination of the other children. * * * At an examination one poor little fellow who was asked by the inspector to repeat his portion of poetry, rose up but could not proceed, whereupon one of the other boys called out, "Please, sir, he's a half timer."

The half timer is not an isolated phenomenon. In Lancashire, Yorkshire, Cheshire, and Derbyshire something like one-half of all the children go to work in the factories before they are 14 years of age. A prominent social worker, speaking of a personal investigation in this district, says:

In one town I visited six large council schools, all of which contained an average of from 100 to 150 half timers. Fifty per cent of the children at work, in the upper classes, were half timers; in some schools even more. In one class I found 49, out of 56 girls, half timers—only 7 being present the whole day. In another, the proportion was 36 out of 55; in another, 14 out of 27; in another, 20 out of 40. The children are not all present at the same time, some being engaged in the morning shift, others in the afternoon; consequently continuity of teaching is only secured with difficulty. * * * The teachers say the children lose more than 50 per cent of their education. When they come to school after the morning shift 33 per cent are in a semicomatose condition, quite unable to profit educationally from the lessons put before them, and more often than not they fall asleep in school during the afternoon. This is hardly to be wondered at when we remember that the children are almost entirely employed in the spinning rooms, and in a very hot and highly humid atmosphere. The monotony of the work, the noise, and the smell, all affect the

children prejudicially and make them less responsive intellectually. Morally the effect is also undesirable. They become less inclined to discipline and rougher in manner.

Some of the worst evils of child labor exist in North Ireland, especially in the linen factories of Belfast and vicinity. A lady factory inspector, making a special investigation of conditions in this district, found that illegal employment of children under age was not uncommon, and that children with surgeon's certificates were working at tasks beyond their strength and capacity. Children sometimes worked with certificates that did not belong to them. In Belfast, of 133 half-time children aged 12 years, 88 were in the three lowest grades at school; out of 146 aged 13 years, 89 were in the three lowest grades, and out of 19 aged 14 years, 11 were in the same primary classes. With nominal compulsory education, over 1 child in 6 of those under 14 years, but of school age, could not read or write. However, the half-time law seems to have one good effect in this part of Ireland—some children first begin to attend school regularly when they enter a factory. The act requires that a certificate of attendance for the previous week be filed with the employer every Monday morning, and where the child has failed to be in school fully one-half of the sessions the previous week, except in case of illness, he must not be employed the coming week until the sessions in default are all made up.

The great preponderance of testimony goes to show that half time in factories weakens children physically. The life of the half timer has been vividly pictured, but without essential exaggeration, as follows:

Every alternate week in the year, rain or sunshine, the children must be wakened at 5 or a little after, in order to arrive at the factory by 6 o'clock, or in some instances at half past 6. It means that for six months of the year they must leave home and walk often a mile or more through the raw mist, the cold, and the darkness so typical of a north of England town. It means that they will stay in the factory until 12 or half past 12, with half an hour's interval for breakfast, a breakfast composed of bread and butter and tea, without milk, taken at the loom side. It means that at 12 or half past, they run home to a midday meal, the more tidy and respectable to change their oil-sodden, ill-smelling factory clothes for neater garments, to snatch a hurried meal and to be in school by 2 o'clock. After a long morning, begun when most of us are asleep, at lugging bobbins, doffing bobbins, laying on bobbins in the spinning rooms, or tenting in the weaving sheds, can you wonder that the children find it hard to concentrate their minds on the mysteries of arithmetic and grammar?

The next week the child works in the afternoon instead of the morning, and probably comes to his lessons with somewhat fresher interest, but by no means on an equal footing with his more for-

fortunate schoolmates. But the physical effect of overfatigue upon growing children, combined usually with improper diet, is here only suggested. This is but one of the many ill influences depressing the physique of industrial populations, yet it is one of the most important. The half-time system falls more heavily upon the children of these factory operatives, precisely because they start in life with a physical handicap. Following are some figures taken in Liverpool, which is not a factory town, showing the average height and weight of school children of different ages, in schools in a wealthy and in a poor district, respectively:

AVERAGE HEIGHT AND WEIGHT OF SCHOOL CHILDREN IN LIVERPOOL, AT SPECIFIED AGES, BY LOCATION OF SCHOOL.

Location of school.	Seven years old.		Eleven years old.		Fourteen years old.	
	Height (feet and inches).	Weight (pounds).	Height (feet and inches).	Weight (pounds).	Height (feet and inches).	Weight (pounds).
Wealthy district	3 11½	49	4 7½	70	5 1½	91½
Poor district	3 8	43	4 1½	53	4 7	71

In the original tables statistics from schools in intermediate districts are given, which show a regular gradation in the height and weight of children of the same ages from those of the wealthiest to those of the poorest class. A similar investigation in Dundee, where there is a large factory population, gave equally striking results. A much more extensive investigation in England showed that at 13 years of age the average height of the boy from a well-to-do home was 3.17 inches above that of the boy who worked, and the average difference in their respective weights was 10.33 pounds. This difference continued to increase until at 16 years of age the nonworking boy had an average advantage over the working boy of 3.47 inches in height and 19.68 pounds in weight. Differences in average chest measurement show the same variation. These physical handicaps of the poor children are not solely caused by early labor. They are also to be accounted for in a large degree by food, housing, prenatal conditions, and to care during infancy. Nevertheless the evil done by too early and too arduous employment accentuates these handicaps. Medical officers report:

Factory children of factory parents, urban and suburban, compare unfavorably with children in nonfactory districts, urban and rural, and the rate of mortality, particularly infant mortality, is unduly high in factory districts.

A factory inspector of long experience says:

Employment of this character [in textile mills], especially if carried on in high temperatures, rarely fosters growth or development;

the stunted child elongates slightly in time, but remains very thin, loses color, the muscles remain small, especially those of the upper limbs, the legs are inclined to become bowed, more particularly if heavy weights have to be habitually carried, the arch of the foot flattens, and the teeth decay rapidly. * * * The girls exhibit the same shortness of stature, the same miserable development, and they possess the same sallow cheeks and carious teeth. I have also observed that at an age when girls brought up under wholesome conditions usually possess a luxuriant growth of hair, these factory girls have a scanty crop, that when tied back is simply a wisp or "rat's tail."

In Bradford 52 head teachers were recently interrogated by a city medical officer as to the physical effect of half time upon school children:

Thirty-seven declared that the system was most injurious to the child's physique. They considered that the lack of adequate sleep, the constant pressure to work quickly, the carrying of big loads of bobbins about the factory, the morning tea without milk, the heat of the spinning room, the lack of play all worked harm.

A factory surgeon of 25 years' experience reports:

The medium average of Lancashire factory children is not equal to the average elsewhere. * * * Even strong children do not escape scot-free, for insidious diseases settle in their lungs, the blood is squeezed out of their faces, their limbs lose their youthful straightness and vigor. But the delicate children have no chance at all, for that which injures the healthy kills the frail quickly. * * * The promising child of 10 degenerates into the lean and sallow young person of 13; and this process is continued until a whole population becomes stunted.

The percentage of accidents among half-time employees is said to be higher than among adults or young persons, indicating probably the influence of fatigue as much as lack of familiarity with machinery.

The argument that the wages of half timers are a necessary aid in the support of their families disregards the influence of the competition of these half timers in lowering the wage of adult workers, making the latter less able to provide for a family, and also the second direct influence of this system, that of depressing the wages of men engaged in the ordinary occupations by throwing into the labor market a large number of boy half timers who are too old to remain in the mills but are not qualified to undertake any skilled occupation. A factory official in a half-time district said: "There is no work for the boys after they are 16. Most of them become casual laborers." It will be shown later that men's wages are generally lowest in half time centers, though in some cases women's wages are higher than elsewhere. Speaking of conditions in Dundee, where there is still considerable half time, though not nearly so much as

in some of the English and Irish cities, a local investigating committee says:

The demand for men's labor would have to be more than three times as large in order to provide work for all these lads, and a number whose parents have sent them to mill or factory as children are turned adrift at the age of 17 or 18. A few of them become skilled workers in other trades, but a mill or factory boy is handicapped in his search for work. If he is not too old to become an apprentice to some trade he may earn half or less than half his accustomed wage. It would appear, moreover, that employers in nontextile trades in Dundee as a rule prefer to employ lads who have not spent a portion of their childhood in the jute works, on the ground that they make steadier workers and are in better physical condition. Some boys on leaving the mill or factory become laborers in other trades; others enter the army, and after serving their term return to the city, seeking work as unskilled laborers; a number—as may be inferred by the fact that there are about 3 women to 2 men in Dundee between the ages of 20 and 45—leave the town to seek work elsewhere, while others live from hand to mouth as casual laborers, or join the ranks of the permanently unemployed. The outlook for boys who remain in the mills and factories is not very favorable, as only about 1 in 12 rises to be an overseer or tenter, and the average wages for men's work in the mill or factory (excluding mechanics) are under 15s. [\$3.65] in 5 processes, under £1 [\$4.87] in 8 processes, and £1 [\$4.87] or over in 5 processes.

Moreover, the statement that the earnings of the half timers are necessary to help support the family does not in the main accord with the facts. Doubtless there are some instances where the wages of one or two children keep a widowed or invalid parent from poor relief; but in Great Britain the child workers in factories and mills and those employed out of school hours (as will be shown later) do not as a rule come from the most destitute classes. In Belfast it was discovered that a considerable number of the half timers in the linen mills came from families where parents earn from \$12 to \$15 a week. Since laborers support families on half this sum, it is not necessity alone that drives these little people into the mills. Not infrequently, it has been found, the family drink bill exceeds the children's earnings. Another consideration pointing to the same conclusion is that in districts where (either on account of local regulations or because of custom) half time does not exist the condition of the working classes is quite as good as where half time is common; and this occurs where the dominant industries are sufficiently similar to show that difference in trade is not a decisive factor in the question. While Oldham, Bolton, Blackburn, and Bradford throng with half timers, Warrington, Widnes, Bootle, and the great cities of Manchester, Leeds, and London have none. A factory inspector intimately acquainted with living conditions in the textile districts said of the system: "It is not so much necessity as habit;" and truly custom

seems more important than need in determining whether or not children under 14 years shall work in the mills.

The argument of some employers that children must be trained from an early age to acquire the skill necessary for fine spinning and other deft branches of textile work is scouted with scorn by well-informed social workers, and receives only a noncommittal smile from some manufacturers. It may well be doubted whether the dexterity mentioned can be acquired only between the years of 12 and 14. The finest yarns spun in the United States are manufactured where the law does not permit children under 14 years to enter a factory, and where there is no hereditary operative class. Most of the textile workers in New England are immigrants from countries where there is little industrial development, who do not take up this work until after their arrival, and generally not until they are approaching maturity. While the proportion of fine work is less in America than in Great Britain, the difference (especially between England and New England) is not great enough to invalidate in this respect a comparison between the two countries. In fact, the frank statement was made on one occasion that half time affected the parents more than it did the mills.

The defenders of the half-time system say that the children are eager to get into the mills and to become wage-earners and partly self-supporting. This is true, and is due to the ideals of manhood and womanhood placed before the children in their homes and by their street associations. The association with older people in employment, the sense of being with the crowd, the freedom from what they regard as the juvenile restraints of school life, all appeal to most children from the factory classes. Also, in the half-time districts, successful business men are often pointed out with the remark that they began as half timers. And there are fairly numerous examples in England of men and women who have survived the hardships of an arduous childhood in the mills to attain success in business, though few—like Livingstone—rise to higher spheres of accomplishment; yet it could hardly be said that these people owe their success to their mill experience.

The half-time system increases the difficulty of administering the factory law and adds to the ease with which it may be evaded. It makes work for both employers and officials. Those who by satisfying the educational requirements become full timers at 13 years, add still more to the complexity of the situation. A mere casual inspection of a workroom full of children affords no clue to the status of the different individuals. In some places where there is a great demand for young labor the proportion of full timers under 14 years is large. The Nottingham lace district is an example of this. The certain prospect of remunerative work, combined with good schools,

may afford the incentive and opportunity for obtaining full-time certificates early; but some well-informed people in England consider that the present law, by allowing too much discretion where there is the maximum pressure of self-interest, permits local educational authorities in some cases to encourage moral, if not technical, evasions of its intention.

An interesting incidental effect of the prevalence of half-time textile labor is that in some districts its example appears to encourage the employment of children in industries that elsewhere are conducted with older workers. An illustration of this is found at Bradford. There were, according to the most recent figures, considerably over 5,000 half timers in the city, constituting more than 10 per cent of the total school enrollment. Spinning occupied 1,725 boys and 1,495 girls, and more than 1,300 children were employed in other textile work, principally as doffers, bobbin layers, and peggers. But there were over 500 half timers, or about 10 per cent of the whole number, in other occupations, in some of which children elsewhere do not usually engage. A factory inspector found 5 children 12 years old attending an ironing and calendering machine in a steam laundry. There were other half timers working in the same establishment. The employer said that unless he caught the children young they went into the mills and remained until they were too old to become skilled laundry workers.

Bradford and the neighboring city of Leeds illustrate the irregular distribution of half-time labor in Great Britain. The cities are some 10 miles apart and are of about equal size. Leeds is a great woolen and clothing manufacturing center, while its sister city is a seat of the fine woolen industry. Yet in Leeds there is no half time. Except in Dundee, there is practically no half time in Scotland, where more interest is taken in universal education than elsewhere in Great Britain. Even in Dundee half time is decreasing in spite of the demand for cheap labor, so that now only 400 children are employed. But in Bradford and in Lancashire half timers have recently been upon the increase, the number in Bradford rising from 4,970 in April, 1906, to 5,130 a year later. In both these districts manufacturers and factory officials ascribed the greater employment of children to the prevailing prosperity in the cotton and woolen trade which created an extraordinary demand for labor. This is in peculiar contrast to the testimony of manufacturers in the textile districts of America in the summer of 1907, that the decrease of child labor was due to the great prosperity and high wages, which enabled parents to keep their children out of the factory and send them to school.

This recent increase in child labor, contrary to the general tendency in Great Britain during the past century, has occasioned much com-

ment and agitation against the half-time system. The returns made by the board of education for 1906-7 show the number of pupils enrolled in the schools who worked part time, for the three preceding years, to have been as follows:

1903-4.....	78, 876
1904-5.....	80, 323
1905-6.....	82, 323

According to the Annual Report of the Chief Inspector of Factories and Workshops for 1907, 45,555 children were examined for certificates exempting them from full school attendance in order to work in factories. Of these, 24,414 were in Lancashire and 11,597 in Yorkshire.

All the influences affecting the distribution of this kind of labor are difficult to determine. Apart from the nature of the dominant industry, the extent to which industries are diversified seems to have something to do with the question. At Leeds and Bradford it was commonly observed that the former city was able to dispense with child labor because it had more different occupations for adults, so that men could find employment at good wages. Leeds has large tanneries and machine shops, and is one of the chief centers in England for the manufacture of woolen clothing, while Bradford is almost exclusively a spinning town. Manchester, with its varied industries, has few, if any, half timers, while Blackburn has over 4,000, Bolton over 3,000, and Halifax, Preston, and Oldham each over 2,000. These are almost exclusively textile towns. However, Paisley, in Scotland, which is preeminently a textile town, has no half timers; but Belfast, in Ireland, with its diversified industries and great shipyards, has many of them.

Although there has been a temporary increase in child employment in some districts, the general tendency, quite apart from legislative influence, is toward its restriction. But this tendency is not continuously effective, so there are temporary rises in what is upon the whole a rapidly descending curve. In England and Wales the per cent of all the children 10 and under 15 years old returned in the census schedules of 1861, 1881, and 1901 as occupied was as follows:

PER CENT OF CHILDREN IN ENGLAND AND WALES 10 AND UNDER 15 YEARS OF AGE ENGAGED IN GAINFUL OCCUPATIONS, AT CENSUS YEARS 1861, 1881, AND 1901.

Year.	Per cent of children 10 and under 15 years of age returned as occupied.	
	Males.	Females.
1861.....	36.9	20.2
1881.....	22.9	15.1
1901.....	21.9	12.0

In 1891 special industrial conditions caused the proportion of boys employed to rise to 26 per cent, or considerably higher than 10 years previously, and the proportion of girls to rise to 16.3, also higher than at the end of the previous decade.

The number of half timers reported in England and Wales in 1890-91 was 173,040, and in 1900-1901 it was 74,468. This decrease was in large part due to restrictive legislation. Between 1895 and 1901 the number of half timers in the cotton trade decreased from 31,570 to 20,953; in the woolen trade, from 13,435 to 7,475; in flax and hemp, from 8,732 to 7,125; in all textile industries, from 64,357 to 43,636. The number of half timers, therefore, fell off 32.2 per cent, while the number of adults employed in this group of industries decreased but 2 per cent. Only about one-half of these child workers are employed in factories, workshops, and laundries under the inspection of the factory department. Mines account for about 10,000, and stores and other commercial establishments, offices, and the messenger service for most of the remainder. In March, 1908, the half timers subject to factory inspection numbered, in the United Kingdom, 37,625, of whom 25,345 were in Lancashire and Yorkshire.

That the tendency to dispense with child workers is not due entirely to legislation is indicated by the fact that while the number of adult textile operatives decreased 2 per cent during the 5 years ending with 1901 the number of young persons between 14 and 18 years of age engaged in these industries decreased nearly 10 per cent. With this latter decrease the law had nothing to do. Probably improvements in machinery and factory organization, and perhaps a better appreciation of the conditions of economic production, are convincing employers that youthful labor is no longer the most profitable. It is not uncommon to be told by a manufacturer that he can not afford to employ half timers. Other reasons, and it is to be hoped the principal reasons, why fewer children go into the mills than formerly are that the sentiment of parents is changing and that working people are better able than they were to get along without the wages of their children.

Nearly all the factory inspectors interviewed in districts where half time is common suggested its gradual abolition as the next desirable amendment to the factory law. Many thought the minimum half-time age limit should be raised to 13 years and no full-time certificates issued to children under 14. This would prepare the way for the complete abolition of the system a few years later. Educational officers were (so far as interviewed) unanimously and emphatically in favor of sweeping the whole institution out of existence as soon as possible. Labor leaders oppose half time, but admit that it is necessary to educate the rank and file of their followers up to their position. The newspapers occasionally contain

letters, apparently from operatives and those who reflect their sentiment, opposing the further restriction of child labor. One such letter closes with the statement: "Of 21,000 members of our Operative Cotton Spinners' Union, of Lancashire and adjoining counties, fully 98 per cent began work as half timers." But the feeling of a little gathering of workmen in a textile city was not responsive to this argument, one man saying that the masters sent their children to the schools and not to the factories, and that he thought his children should have the same privilege. In Preston the unions were said officially to oppose half time (though this could not be verified) and educated working people opposed it; but the sentiment in its favor among the mass of the operatives was strong. Still this sentiment is said to be changing rapidly.

Child labor in mines has fewer defenders among the workers. In the coal mines alone there are between 8,000 and 9,000 boys under 14 years of age, two-thirds of whom work underground. A few girls are employed above ground, but their number is inappreciable. Of two neighboring and competing coal districts one may employ children and the other none. The character of the coal, as clean or shale-mixed, might affect differently in different places the need of cheap labor at the picking tables; but it is difficult to see how the general physical conditions of adjacent districts can influence so variously the necessity for child workers underground. These are mostly drivers and trap boys. Mine employment, therefore, presents features that substantiate the surmise made in case of factories, that child labor is more a matter of custom than of economic convenience. The employment underground of children under 14 years is one of the points against which social reformers are directing their attacks. In the Cardiff field boys prefer working in mines to factory employment because of the higher wages. In that district there are 1,347 boys working underground. At Newcastle there are only about 350. In the Midland district there are 1,027, and in Durham 1,084. Durham has about as many adult coal miners as Scotland, but in Scotland only 100 boys work underground.

Incidentally it may be remarked in connection with coal mines that they employ about 6,000 women and girls in Great Britain, all of whom work above ground. Some of these are office and lamp cleaners, telephone attendants, and clerks; but a very large majority work at the picking tables or endless belts over which coal is carried to be cleaned from shale, and some load and unload tubs from the carriers. Though this labor is discountenanced by public opinion, it is probably a field of employment preferable in some ways to work in a factory or shop. One mine inspector reports that "both as re-

gards health and morals they [the coal pickers] will compare favorably with any other class of female workers." A woman trade-union secretary made the same statement. But it is proposed in a projected bill to forbid this labor altogether, thus completely excluding women, who are already forbidden to work underground, from coal mines.

Returning for a moment to the question of child labor, though there is now no bill before Parliament radically extending the present restrictions, the combined influence of law and industrial progress bids fair within a very few years to make employment under 14 years practically unknown in factories, and to lessen employment immediately above that age.

EMPLOYMENT OF CHILDREN OUTSIDE OF FACTORIES AND WORKSHOPS.

Before considering the proposed minimum wage amendments to the Factory Act, which affect chiefly women, it may be well to depart from the discussion of that statute long enough to review a second law relating particularly to child labor, the Employment of Children Act of 1903. This was passed in response to an agitation, extending over several years, for the regulation of children's work outside of school hours and of trading by children on the streets. Few, if any, of these children were protected by the factory and mines laws. A previous statute for the prevention of cruelty to children had restricted their employment in dangerous or immoral occupations. In 1899 the educational department obtained an incomplete return showing the employment of children in England and Wales outside of school hours, which indicated that, of a total registration of something over five and a half million children under 14 years of age, 144,000 worked for compensation when not in school. In the occupations followed principally by boys, 76,000 were employed in shops and offices, 26,000 sold newspapers or hawked goods, over 10,000 did odd jobs, and 6,000 worked on farms. Of the girls, some 20,000 were in domestic service and 4,000 did sewing. Rather over a third of these children worked more than 20 hours weekly outside of school; more than a fourth of them were under 10 years of age; and the average earnings of those of all ages did not much exceed 25 cents a week. The result was that many children were overworked, to the injury of their health, and their progress in school was hindered. But the opinion of many teachers was that a limited amount of outdoor employment did not harm the children.

The distribution of this form of child labor was uneven, a much larger proportion of the public-school pupils being employed in some city and some country districts than in other city and other country

districts. In London, of 480,000 pupils over 7 years old, 30,800 were wage-earners, and some 12,000 worked 20 hours a week in addition to 27½ hours in school.

These returns were admitted to be incomplete when published, and subsequent investigation indicated that they fell very far short of reporting the full number of children engaged in outside work. In 1901 an interdepartmental committee, representing not only the education office but also the authorities regulating child labor in industries, reported that in England and Wales nearly a quarter of a million children were probably at that time working outside of school hours in occupations not subject to inspection by the central Government; and that 200,000 represented a fair average of the number attending school full time and working for wages, for their board, or for other compensation outside these hours. The committee recommended that powers be given local authorities to make by-laws regulating (1) the hours between which school children might be employed; (2) the age at which employment might begin; and (3) the number of daily and weekly hours beyond which they might not work. These recommendations were embodied in the act of 1903.

The law places general restrictions upon the employment of children outside of school and gives authority to local governing bodies to increase these restrictions. The whole administration of the act is left to local supervision, the factory and mines inspectors not intervening in any way for its enforcement. But the local by-laws made under this authority must be confirmed by the secretary of state before they become valid. The parliamentary restrictions upon the employment of children outside of school are:

(1) A child shall not be employed between the hours of 9 in the evening and 6 in the morning: *Provided*, That any local authority may, by by-law, vary these hours either generally or for any specified occupation.

(2) A child under the age of 11 years shall not be employed in street trading.

(3) No child who is employed half time under the Factory and Workshop Act, 1901, shall be employed in any other occupation.

(4) A child shall not be employed to lift, carry, or move anything so heavy as to be likely to cause injury to the child.

(5) A child shall not be employed in any occupation likely to be injurious to his life, limb, health, or education, regard being had to his physical condition.

(6) If the local authority send to the employer of any child a certificate signed by a registered medical practitioner that the lifting, carrying, or moving of any specified weight is likely to cause injury to the child, or that any specified occupation is likely to be injurious to the life, limb, health, or education of the child, the certificate shall be admissible as evidence in any subsequent proceedings against the employer in respect of the employment of the child.

Up to the end of February, 1908, 69 local authorities, 7 urban districts, and 3 counties, including the city of London, had made by-laws under this act; but in 34 instances these regulations deal only with street trading. The London County Council rules, which are among the more recent, provide that children under 14 years shall not be employed in industrial work (such as assisting at a trade followed in their homes) on school days, except between 5 and 8 p. m., or on other week days except between 9 and 12 a. m. and 5 and 8 p. m.; and they shall not be employed on Sunday. Children attending school full time shall not be employed at any occupation between 8 a. m. and 5 p. m., or before 6 a. m. or after 8.30 p. m. This shortens by a half hour in the evening the time of employment permitted by the general act. Boys may not be employed where any intoxicants, except those in sealed vessels, are sold, and boys under 12 shall not be employed in barber shops. If a school is open only 2 days or less during any week, pupils may be employed not to exceed 30 hours that week. Several cities do not allow the employment of boys under 13 years of age in barber shops; and Banbury, Brighton, and Sheffield have prohibited altogether the employment of boys in such shops. Some local regulations specifically provide against young children being employed to deliver milk at very early hours or to deliver messages late at night.

This kind of child labor presents several aspects and problems similar to those noticed in connection with half-time employment in factories. The London medical officers have arrived at the conclusion that as a rule it is the children above the average in physique and mental ability who go to work. "The evil effects are shown later, when the best capital of the nation has been squandered in premature wage-earning." As in the case of half timers, too, investigation indicates that family necessity is not the determining factor in deciding the extent of this kind of child employment. A study of the incomes of 802 families in London whose children were employed out of school hours showed that for only 143 families were the weekly earnings under £1 (\$4.87), while in 343 families they ranged from £1 to £1 10s. (\$4.87 to \$7.30), and in 316 families were £1 10s. (\$7.30) and over. Small as these earnings are, they are above those of the poorest families in that city. Outside of London a partial investigation of typical districts indicated that of 714 cases more than half had an income of £1 10s. (\$7.30), while in 258 cases it was over £1 15s. (\$8.52).

Probably the worst conditions are found in large cities, and those most detrimental to the health of the children are in industrial work. Nearly 17,000 children attending school full time have been found to be engaged in piecework trades in their homes outside of school

hours. These trades include making paper bags, brushes, baskets, and match boxes, sorting rags, and linking and carding hooks and eyes. Over 4,000 little girls—for this applies only to children under 14—are engaged in making dresses, shirts, mantles, belts, and similar articles. In the East End of London children are unable to take advantage of the fresh-air fund outings to the country, because their parents want their labor during vacation. Little girls of from 6 to 10 years of age help their mothers make hairpin boxes before and after school; a little girl of 13 was found who did trouser finishing. In Nottingham an investigator was told by teachers that children of from 5 to 11 years of age were employed at home during the dinner hour. "A little girl of 8, still in her hat and jacket, was at 1.30 drawing lace for her mother; she had not had dinner, and probably would eat it on her way back to school."

Quite apart from temporary overstrain incidental to such children's work, especially where they have to carry burdens, and even apart from the physical fatigue of abnormal labor during the growing years, the constant application to routine occupations during a time when the child's perceptive faculties are most active, and are evidently intended by nature to receive the greatest variety of impressions, is mentally deadening. The total effect upon school progress is very bad. A London head teacher investigated the results of such work upon 103 boys. Although the usual record of such children before going to work was above the average, 54 of these were reported "dull" or "very dull" or as behind in their work or recently demoted from a more advanced class. In 1905 one of the London physicians made an examination of 330 similar cases, finding that 209 showed retardation in school work, 86 being one year, 83 two years, and 3 four years behind the grades corresponding to their age. These results may not be due to the effects of overwork alone. They are doubtless accounted for in part by poor diet and other home conditions. But the testimony seems to show that the great setback in the child's school progress does not come until the child is employed outside of school hours, and that therefore this is the immediate and probably the principal direct cause of its mental retrogression.

That a child of average strength can not attend school full time and work outside for several hours a week without suffering in health is also a fact based upon something more than common opinion. An investigation of 340 working boys, from 14 schools, representing an attendance of 3,864 children, showed that of those working not to exceed 20 hours per week 50 per cent showed fatigue signs, 34 per cent anæmia, 28 per cent severe nerve signs, 15 per cent deformities, and 11 per cent heart signs. Of those working 20 to 30 hours outside of school, 81 per cent showed fatigue signs, 47 per cent anæmia, 44 per cent nerve signs, and 21 per cent deformities. Of those working over

30 hours, 83 per cent showed fatigue signs, 45 per cent anæmia; 50 per cent nerve signs, 22 per cent deformities, and 20 per cent severe heart signs. Industrial deformities are here referred to. Of the shop boys carrying heavy weights, 26 per cent showed deformities and 21 per cent heart disease. Girls carrying heavy weights and employed in minding babies suffer from lateral curvature of the spine and flat-footedness. In another public school of 103 boys who worked outside school hours, only 30 per cent were of normal physique and health and showed no ill effects from their labor.

Though there are no statistics showing the number of children working outside of school hours since the Employment of Children Act was passed, the indications are that the number is not decreasing. It was noted that even the employment of children in factories, where the influence not only of legislation but also of mechanical improvement and perfected organization is to displace child labor, has risen temporarily since 1903. But in case of outwork children the law is not to the same extent supported by the progress of industry. The trades followed by these little workers are essentially unprogressive. The demand for their labor may remain stationary or even increase for an indefinite period. We might therefore anticipate what recent inquiries have confirmed, that the proportion of school children attending classes full time and working for wages has not diminished. An investigation of a few typical London schools shows that in some places as high as 13 per cent of the pupils enrolled are employed outside. Still the effect of the law has been felt in at least two ways, according to recent testimony, (1) the number of school children working for small tradesmen has decreased, many of the children having been displaced by boys who have left school and who work full time, and (2) the number of school children employed as house servants is now less, the children having been replaced by girls who have left school and who work full time as domestic servants.

STREET TRADING BY CHILDREN.

Street trading by children during school hours has been illegal in Great Britain since compulsory education was adopted; but trading on the streets during school hours by children over 14 years and by younger children outside of those hours, was first regulated by Parliament in the act of 1903. The educational return of 1899 had shown 17,617 school children thus engaged, and the report of the interdepartmental committee 2 years later estimated the number—for England and Wales alone—at 25,000. Before 1903 most English cities had but limited power to deal with this subject, though as early as 1884 Liverpool seized upon a general clause in the corporation act to issue a by-law forbidding children under 9 years old to trade on the

street, and children under 13 years to do so after 9 p. m. in the summer and 7 p. m. in the winter. In 1899 Parliament gave this city special authority to regulate further this kind of traffic. Because it is a large seaport Liverpool has an unusually numerous waif and semi-homeless child population, many of whom pick up a precarious living by selling newspapers, matches, flowers, and other small articles. But the problem is not peculiar to that city. In 1905 a census of street traders in Leeds showed the following numbers of children under 16 years old trading on the street: Selling newspapers, 753 boys and 6 girls; selling matches, 24 boys and 10 girls; selling vegetables, 16 boys and 1 girl; selling fruit, 9 boys and 2 girls; selling miscellaneous articles, 46 boys and 15 girls.

From the point of view of immediate earnings some of these children are not unfortunate as compared with other young workers. Newsboys especially often make from \$2 to \$4 a week. In the social esteem of the street venders themselves match sellers are said to occupy the lowest place, but this distinction is not necessarily based upon comparative earnings.

The evil results of street trading are too well known to need more than summary enumeration. These children furnish a very large proportion of recruits to the criminal population. Those who do not graduate into crime form a liking for the petty excitements of the street and a distaste for regular employment. They lack skill and perseverance, shun the monotony of a permanent job, and as they grow older either follow itinerant and questionable trades or become ill-paid and inefficient casual laborers. Therefore these young people are a source of waste to society rather than of profit. Finally—and this seems to be curiously prominent in the minds of many respectable city residents—swarms of half-fed, half-clothed, and dirty children on the streets, importuning passers-by, are as offensive to delicate people as unswept pavements and malodorous sewers. During the investigations preceding the passage of the act of 1903 it was shown that in Birmingham out of 713 children found selling in the streets during six months 458, or nearly two-thirds, had been prosecuted during that period for various offenses. The number charged with felony was 115, of which 49 charges were against boys and 4 against girls under 14 years of age, while there were 185 charges of gambling, all against boys. A city medical officer testified:

Street trading has a pernicious effect on the boys engaged in it. There is, first, the evil physical effect of excessive fatigue during the years of growth. This is more marked in street trading than in employment under other by-laws of this act (the Employment of Children Act). The ulterior consequences are even more serious. The children employed as street traders are brought into contact with the adult class of street traders, their moral standard is endangered, and

they are apt to drift into the large class of those who never have any other than casual employment throughout their lives.

Liverpool, under the additional authority given by Parliament in 1899, began to license children trading on the streets, restricted further the time and the ages at which children could follow this vocation, and devised a system by which private philanthropy and public supervision cooperate to keep these children properly clothed. Other cities soon applied for special legislation to enable them to follow Liverpool's example, and the final result was the act of 1903.

The general provisions of the law, in addition to the clause quoted above forbidding children under 11 years old to sell newspapers or other articles on the streets, are as follows:

Any local authority may make by-laws with respect to street trading by persons under the age of 16, and may by such by-laws—

(a) Prohibit such street trading except subject to such conditions as to age, sex, or otherwise as may be specified in the by-law or subject to the holding of a license to trade to be granted by the local authority;

(b) Regulate the conditions on which such licenses may be granted, suspended, and revoked;

(c) Determine the days and hours during which, and the places at which, such street trading may be carried on;

(d) Require such street traders to wear badges;

(e) Regulate generally the conduct of such street traders: Provided as follows:

(1) The grant of a license or the right to trade shall not be made subject to any conditions having reference to the poverty or general bad character of the person applying for a license or claiming to trade;

(2) The local authority in making by-laws under this section shall have special regard to the desirability of preventing the employment of girls under 16 in streets or public places.

The essential requirement of the by-laws enacted under this provision by the local authorities is that children trading in the street shall hold a license from the city. The license is indicated by a badge or belt, which is usually of one color for children under school age and of another color for children above that age, and this badge must be kept prominently in sight while the child is on the street. Children are required to be decently clothed and orderly, and are not allowed, either in pursuit of business or to deliver goods, to enter places of public entertainment or where intoxicating liquors are sold. The minimum age at which children are granted licenses varies in different places, but for boys it is usually 11 or 12 years, and for girls it rises from 11 or 12 up to 16. The London County Council does not allow girls under 16 to trade on the streets unless accompanied by a parent or guardian. The London rules, which are fairly representative of

those in other large cities, limit the hours of street trading for children between 11 and 14 years old to one hour in the morning—from 7 to 8—and to 3 hours in the evening—from 5 to 8. There is the single exception that during the summer months a child who attends a street stall under the immediate direction and control of an adult may work as late as 9 p. m. Two towns, Burnley and Hornsey, have forbidden altogether street trading by girls under 16 years, and though the by-laws of the following cities do not expressly forbid it, no licenses are issued to girls by the officers at Banbury, Crewe, Eastbourne, Hove, Newport, Norwich, and Stretford. In Scotland girls are generally prohibited to sell goods on the streets until they are 16 years old.

The administration of the law is made as simple as possible. Its execution is intrusted to a division of the police office, or watch committee, known usually as the "street trading department." This is in charge of a special officer with his assistants, who issues licenses, enforces the rules under which they are granted, and acts as public guardian of the children under his supervision. A few qualified policemen, generally plain-clothes men, who are specially assigned for this purpose, keep track of the children on the streets and even to some extent in their homes. A successful officer generally knows by their first names all the street trading children on his beat and cultivates friendly relations with them, so the regulations are applied as informally as is compatible with their observance. To quote from a report of the head constable of Liverpool:

In the performance of these duties the constable is building up a knowledge of the youth in his particular district, and is teaching both them and himself that a policeman's first duty is the prevention of crime; and that there is no better way of doing it than by helping the young to keep out of temptation.

In 1907 the 11 officers detailed for this work in Liverpool made 37,000 visits to homes, where they became "almost as friends of the family, and advise, with the sanction of the law behind their advice."

When a child wishes to sell goods on the street he tells a policeman or his teacher, or any other responsible person, that he wants a license, and generally through the aid of such person procures the proper application form and is assisted to fill it out, after which the form is filed with the department. This form must be indorsed by the parent or guardian of the child, if it has any; and this requirement alone prevents many newsboys and would-be juvenile vagrants from deserting their homes and living in warehouses and alleys. When the application is received an officer visits the boy's home and reports to headquarters the character and circumstances of the boy

and his parents. An inquiry blank is also sent to the school the child attends. If the reports are satisfactory, the boy receives his belt or badge, usually from a member of the committee, and has explained to him orally under what conditions he receives it and will be allowed to retain it.

In some cities, though this has not been made general by the act of 1903, provision is made that the boy shall be decently clothed. In Liverpool this is done through an organization called the "Police Aided Association for Clothing the Destitute Children of the City," a voluntary society founded about 13 years ago, whose activities are not confined exclusively to street traders. Though the society is a private one, and is supported by free-will subscriptions, it bestows its charity subject to the advice and under the supervision of the police department. If a child on receiving its license is not decently clothed, and the parents are clearly unable to provide suitable clothing for it, the street trading committee supplies him with a suit of clothes and boots at the expense of the police aided society, and charges him a penny a day until they are paid for. The child must wear these clothes when trading, and, by reason of the fact that the clothing is so marked that it can not be sold or pawned, the child is protected from being despoiled by dissipated parents. For some years after the system was started the cost of the clothing supplied annually increased, but the proportion of that cost repaid by the children or their parents rose from 32 per cent in 1903 to 93 per cent in 1907. The latter year the demand upon the department for clothing fell off some, the number of children so aided decreasing from 301 to 273 and the cost of clothing from £90 5s. 6d. (\$439.32) to £72 8s. (\$352.33). Liverpool has rather unique authority, under its special legislation, by which street traders found to be living in vicious homes may be placed in lodgings approved by the department and their expenses partly or wholly provided for from public funds.

The supervision of the children continues throughout their license-holding period, and efforts are made, both through the friendly advice and assistance of the officers and by private societies, to get them into permanent positions, where they will receive some training for a better career than itinerant vending. This has been so far successful in some places that in 1907 the Bradford watch committee was able to report that out of the total children licensed when the law went into operation—nearly 600—only 22 still made street trading their sole occupation.

The license itself is distinct from the badge and contains in simple language the rules which the child is expected to observe. The following are the provisions of the Glasgow license, which do not differ

materially from those of Liverpool, Manchester, and other British cities:

CONDITIONS OF LICENSE.

You must not break any of the by-laws.

The badge does not belong to you, but is only lent to you to show that you hold a license to trade in the streets. You will only be allowed to keep it so long as you are licensed and observe these conditions.

It must be given up to the police whenever required, or when you stop trading, or when your license has expired.

You will not need it after you are 16 years of age.

It must not be sold or pawned or lent to anyone else, and you must not wear any other.

You must always keep it clean, and wear it when engaged in the streets.

It must be worn on the arm with the lettering uppermost, and must not be covered in any way.

If any person asks for the number of your badge you must always show it.

You must always be clean in person and clothing.

If a policeman tells you to move on, you must do so at once.

If you are under 14 years of age you must not trade in the streets or other places between 9 o'clock forenoon and 4 o'clock afternoon, except on Saturdays and holidays; or after 7 o'clock at night from 1st October till 31st March. For the rest of the year you must not trade after 9 o'clock at night.

If between the age of 14 and 16 years you may trade all day, but not after 9 o'clock at night.

You must not damage your license or lend it to another child or other person.

You must produce it when required.

If you are convicted before the court for any offense, or break these conditions, you may lose your license, and you will not be allowed to trade in the streets.

You must not trade in the streets when there is any infectious disease in your home.

If you change your home you must go at once to the central police office and report it.

You are strictly forbidden—

- (a) To obstruct any person or cause any annoyance;
- (b) To impose or attempt to impose on any person;
- (c) To shout to the annoyance of any person;
- (d) To continue shouting when asked by any constable to stop doing so;
- (e) To sell any indecent book, paper, print, picture, photograph, or article;
- (f) To write or draw anything indecent on the pavement or on the walls of buildings;
- (g) To sing or recite anything indecent, or to use bad language;
- (h) To fight or quarrel with other boys or girls;
- (i) To play football or any other game on the streets;
- (j) To smoke while trading in the streets or other public places;

- (k) To be assisted by an unlicensed child;
- (l) To beg;
- (m) To go into any public house or any theater, music hall, or place of entertainment to trade there.

The general experience is that licensing not only lessens the number of children trading on the street, but diminishes from year to year the number even of licensed children. As early as 1900 the Liverpool committee reported that the application of the by-laws "has had the effect of greatly reducing the number of children trading in the streets, especially during school hours and late in the evenings, and of improving the condition, appearance, and behavior of those children who still engage in street trading." That year 1,049 licenses were granted. At the end of December of each of the following years the numbers were:

1903.....	732
1904.....	669
1906.....	553
1907.....	540

Meantime the law is being better enforced each year, as familiarity with its provisions increases among the children and familiarity with the children increases among the police. In 1907 there were 253 proceedings for trading without a license, mostly against young children and strangers ignorant of the law; and in four cases out of five the offenders were dismissed with a caution. The report from other cities is the same. In Birmingham the number of children trading in the streets decreased 500 between January, 1907, and January, 1908. In Newport during the last year reported the number decreased from 382 to 327. In Bradford, where the number of license holders has regularly fallen since 1903, the decrease during the last three years reported was 217; that is, the number fell from 597 to 380. In the neighboring city of Leeds, where street traders are not licensed, their number in 1905 was 892, or more than double as many as in Bradford. But in the latter place there is more industrial employment of children.

In response to inquiries as to the effect of licensing in preventing juvenile crime, it is difficult to get positive answers, partly because opinion as to the influence of licensing upon this class of delinquency differs, but chiefly because recent reforms in the method of treating youthful offenders in Great Britain make comparative statistics misleading. Speaking generally of the influence of the laws, the Liverpool watch committee says:

During the last period under report (six months to June 30, 1905) not a single charge of immoral or indecent conduct has been made against a licensed girl, whereas a few years ago such charges were common, and there were only 2 licensed boys among the 68 committed

to the reformatory schools, and only 6 among the 583 committed to industrial schools.

The Manchester authorities also noted that commitments to industrial schools had decreased largely since the licensing regulations went into force. The Glasgow police report for 1906 mentions street trading as one cause of a recent increase of crime among young persons. The street-trading laws went into force in that city in the spring of 1906. Official statistics show that the number of convicted youthful offenders under 16 years of age fell from 2,236 in 1905, before the laws were in force, to 1,832 in 1907, the first full year they were in application, a decrease of 404. This decrease is not ascribed wholly to the introduction of licensing, because the probationary treatment of young offenders has recently been extended, under police caution, so that they do not come to trial before the courts so much as formerly. The registrar of police of that city said:

In the opinion of the authorities most familiar with conditions of juvenile crime in Glasgow, the application of the street-trading act in this city has not yet made an appreciable difference in the number of offenders brought before the court.

On the other hand, in its report for 1907, the Newcastle watch committee says, in referring to a decrease of 161 in the number of juvenile offenses during the preceding year:

Before licenses were granted by the watch committee inquiry as to the homes and circumstances of the children was made by two officers specially detailed for the work. They thus got into touch with the children and their parents, and the decrease of juvenile offenses above referred to is, I believe, one of the good results of the supervision and control which they subsequently exercised.

Though there is not yet a satisfactory statistical basis for the opinion that the licensing laws decrease crime, most police officials and others in touch with the problem seem to believe that in the long run these laws will assist in reducing crime not only among juveniles, but also among adults. The fact of being under official supervision, and having a recognized business status, give the young license holder a sense of responsibility. Home influences are more alert, especially where the child's earnings are an essential part of the family income. The child with a vested interest in the trade of his locality, represented by a license, himself enforces the law against unlicensed interlopers, and so becomes an upholder of this particular law, and perhaps later of law in general.

The influence of these regulations upon school attendance can be shown more precisely. In 1905 the Liverpool watch committee reported—

That (the school attendance) of the licensed children is only a point over 1 per cent less than the average for the whole of the children attending the council schools, which would most probably

not be the case with an equal number of children if free from supervision, and, as a proof of this, the subcommittee may again point to the fact that only 6 licensed children were among the 82 committed to Hightown and the 336 committed to the day industrial schools for school offenses.

Three years later the police department of the same city could point to the fact that the percentage of attendance of street-trading children was actually higher than the average attendance in elementary schools, or 88.6 as compared with 88.2 per cent. During the first quarter of 1908 the street-trading children increased this margin of attendance to a full 1 per cent above the average attendance of all children in the schools. The Bradford school committee notes a marked improvement in the regularity of attendance of licensed children. The Manchester education committee reports, in 1907:

The school attendances of children holding the badges for street trading issued by the watch committee have been regularly inquired into, and it is gratifying to state that on the whole it is most satisfactory. The regulations for street trading carried out by the police in Manchester have proved a great safeguard in preventing juvenile depravity, and have undoubtedly tended to decrease the number of children formerly sent to industrial schools.

In Manchester the street-trading children compare even better with the rest of the school population, in the matter of regular attendance, than in Liverpool. In August, 1908, the educational authorities supplied these figures for the preceding year: Average attendance of all children, 89.35 per cent; attendance of licensed street-trading children, 96.27 per cent.

As to the more general results of the law, the report of the chief constable of Liverpool for 1907 says:

The streets are bad places for a child to play or to work in, but, until there is somewhere better for him to go to, there he must be, and the best thing to do is to face the evil and to minimize it as far as possible, license to trade in the streets only those who will not suffer physically and only those whose parents can not be persuaded or are unable, and indeed very many of them are unable, to find them some other employment, and teach them a little discipline by making them obey regulations.

I will not pretend that all the licensed children are as clean and well behaved as they might be, but I will say that they are a great deal cleaner and better behaved than they would be if they were not licensed and had nobody looking after them.

The Newcastle police authorities thus summarize the effect of the regulations in that city:

The licensing of juvenile street traders has undoubtedly had a good effect in clearing the streets of children begging under pretense of selling, preventing them from frequenting licensed premises (where intoxicants are sold), and practically stopping street trading by girls under 16.

The report of the street-trading subcommittee of Bradford for 1907 contains the following testimony:

It is admitted that as a result of the control of street trading by children there have been marked improvements, not only in the general condition and habits of the street-trading children, but to some extent in their home surroundings, as it tends to impress the parents with a greater sense of their responsibilities.

There is no longer the same number of ragged children begging, actually or under pretense of selling, and those under 11 years have entirely disappeared.

In Birmingham, according to the police report, the licensed children "are now more orderly and civil." In this city and in Manchester the children are assisted with clothing, as they are in Liverpool. In Manchester a systematic effort is made to have the children apprenticed, and a record is kept of them after they leave school. There has been little opposition to the introduction of these laws. When they were proposed at Belfast some newspapers were at first hostile, fearing that the restriction to trading might injure paper sales in the street, and now and then a critic is found who points to violations of the law—which are occurring and from the nature of things must constantly occur—to prove that it has had no effect. But public opinion is decidedly in favor of the regulations, and though they have not been in force long enough and extensively enough to exert their full influence the conclusion is irresistible that they benefit the children at present and that probably in succeeding years, when they have been in continued operation for a generation, they will have benefited the health and morals of many of the weaker industrial population, and will have lessened among them both crime and poverty.

The Employment of Children Act does not give other local authorities all the powers which Liverpool received in 1899 and still exercises. Possibly the licensing policy has not accomplished so much in other cities for this reason. The Liverpool corporation has the explicit right to arrest for offenses under the act, to contribute toward the cost of a child's maintenance, lodgings, or clothing, and to visit the homes of children to see that they are properly treated. It is the opinion in that city that these additional powers greatly assist in making licensing successful.

OUTWORK, SWEATING, AND THE MINIMUM WAGE.

The principle of the minimum wage, which it is now sought to establish in the factory act, is entirely new in Great Britain; and in factories themselves the need of such a wage is not, even now, thought sufficiently urgent to shape serious legislative projects. The new proposals are aimed at sweating, which is chiefly associated with

work done in the homes of workers living in the slums of large cities, where competition for a bare existence depresses earnings to the lowest limit. The misery found among this class of work people has been too often described to be unfamiliar. In some British industrial towns women work from sunrise till late into the night for the equivalent of \$1 or \$2 a week. No reliable estimate of the average wage of home workers can be made, but it is probably, for equal time, not much over half the average wage in factories. This is partly because, as a rule, less profitable occupations are followed in the homes; but it is largely due to other competitive conditions.

Outwork is technically in Great Britain work for an employer performed on premises not subject to factory inspection, but for the present purpose the term will be used to apply more particularly to some form of manufacturing or preparing articles for sale. Home work, often used interchangeably with outwork, is more comprehensive, and includes laundering and a number of other female occupations. In relation to sweating, too, it should be observed that small factories and workshops, nominally subject to factory inspection, are often seats of the same evils that afflict outworkers, and may even present those evils in an exaggerated form.

Some of the more obvious economic causes of outwork are (1) economy of capital on the part of the employer, (2) larger and more elastic labor supply, and (3) freedom from government supervision. The economy of capital is naturally greatest where rents are highest; therefore, we find much home work in densely populated districts. The worker must have a lodging whether he works at home or in the factory, and usually heat and light; so by utilizing the same space for manufacturing he saves for his employer three important items of expense. The labor supply is larger because women and children who, on account of domestic duties or, perhaps, on account of inefficiency could not be employed economically in a factory, can work at home irregular hours. The supply is more elastic, for the same reasons, and thus conforms to the convenience of many trades, like garment making, in which the demand for goods is concentrated at certain seasons and, on account of fashion changes and other elements of uncertainty, can not be anticipated by manufacturing in advance. Finally, freedom from government supervision enables unscrupulous employers to extort a greater profit from the service of their working people. This ultimately reacts on all employers by lowering the standard of wages and efficiency throughout the competitive area.

The condition of outworkers is much better in some industries and localities than in others, and it likewise varies widely within the limits of the same trade and district. It is the aim of the proposed legislation to equalize these conditions, so far as they relate

to hours and wages, or to level them up to the higher existing standards. A parliamentary committee reporting upon home work in Great Britain, in the summer of 1908, had ascertained that "the earnings of a large number of people—mainly women who work in their homes—are so small as alone to be insufficient to sustain life in the most meager manner, even when they toil hard for extremely long hours." Not all these women are solely dependent on the product of their own exertions, but many are. An exhaustive private investigation of women workers in Birmingham showed that less than one-half of 1 per cent of the outworkers who were married (and a very large percentage of the total number were married) worked for pocket money. Nearly one-half of all the women were supporting themselves, and sometimes children, by their labor. The parliamentary committee found that in addition to wives and daughters who took in work to increase the family income, there were two classes who had no other recourse than their own earnings, (1) women who support themselves and sometimes fatherless families, who are usually regular workers and often possess some skill, and (2) wives who work when their husbands are out of employment, who are mostly casual hands and quite unskilled and therefore compelled to accept the lowest wage in the least desirable trades. For either of these classes to be reduced below a subsistence wage means one of three things, partial pauperization by being thrown upon the poor rates, gradual starvation and so physical deterioration as a worker, or vice and crime as the ultimate recourse of existence. Any one of these results not only ruins the individual, but helps to impoverish society, and therefore constitutes an economic motive for government intervention.

That outworkers should be paid less than factory workers is in part justified on broad economic grounds, relating both to competitive conditions of factory production and to the needs of these two classes of workers. In most industries the superior economy of factory manufacture is unquestioned, and its advantage continues to increase; therefore, in competition with home manufactures the factory owner can afford to pay a better wage. The Scottish Wholesale Cooperative Society determined to place its shirt making entirely on a factory basis. In competition with sweaters it lost money at first, but soon began to make a profit out of the experiment. The factory paid its operatives on an average 18s. 3d. (\$4.44) a week, for 44 hours' work; the sweaters with whom it competed paid their women 10d. (20 cents) a day, for about 18 hours' work, and compelled them to supply their own thread. At anything like equal wages, therefore, the outworker could not be employed, though in the case cited the great difference in pay was probably due in part to the excessive profit made by the sweater. Testimony was given before

the parliamentary committee just mentioned, in 1908, showing that upon shirts selling in England for 10s. 6d. (\$2.56) a dozen, wholesale, the sweater paid for cutting, 1½d. (3 cents); making, 1s. 6d. (37 cents); finishing, 6d. (12 cents); total, 2s. 1½d. (52 cents); and the sweater gets 4s. (97 cents), or a profit of 1s. 10½d. (45 cents).

But the entire difference between the wages of outworkers and of factory operatives, so far as it is justifiable, does not depend alone on the superior economy of the factory. The expenses of home workers are sufficiently less to admit of their receiving lower compensation for their labor. It is said that 9 shillings (\$2.19) in a home is better than 14 shillings (\$3.41) in a factory. The home worker does not have to pay for the care of children, for expensive canned goods, or for washing and other services that the operative usually is obliged to hire or purchase. In Birmingham the charge for caring for young children and providing their midday meal is usually in the poorer districts 6d. (12 cents) a day; in Dundee it ranges from 2s. 6d. to 6s. (61 cents to \$1.46) a week.

However, the relatively lower wages of outworkers are not in all cases explained by the causes just mentioned. In fact, no cause can justify a wage that will not subsist the worker. In Great Britain a subsistence wage for a single woman is estimated to be between \$2.50 and \$3 a week. The superintending sanitary inspector of Glasgow gives the items of expenditure upon which a weekly wage should be rated as follows: Food, 3s. (73 cents); rent, 2s. 4d. (57 cents); clothing, light, fire, household sundries, 2s. 6d. (61 cents); car fares between home and employer with goods, 10d. (20 cents); thread, 4d. (8 cents); sick and funeral society assessments, 4d. (8 cents); all other expenditures, 1s. 6d. (37 cents); total 10s. 10d. (\$2.64). In London prices are somewhat higher, so that these items would total nearly 12s. (\$2.92). If a home worker labors 10 hours a day, besides attending to her household duties, she will have to earn about 5 cents an hour to attain this minimum, allowing nothing for slack work or saving. However, abundant testimony was presented by workers and factory inspectors before the home-work committee last summer and on previous occasions to the effect that many home workers did not earn more than 2 cents an hour. A skilled workwoman, making shirt waists and kimono belts, testified that when fully employed her average net earnings were less than 6s. (\$1.46) a week. Women workers at Cradley Heath average about 6s. (\$1.46) a week when they work 14 hours a day.

The reasons for these small earnings are various. Much of the low-paid work is sewing, which requires little training, and competition is therefore keen; such employment is comparatively easy to obtain; a large proportion of the workers are engaged in the production of articles in competition with machinery; and cheap foreign-

made goods tend to depress prices. Workers making baby linen, shirt waists, and underclothing—articles which a very large number of wives and mothers can make for themselves—must produce them at a very low price to keep the great body of consumers, the families of working and middle-class people, from buying the materials and making the articles in their homes.

If these and similar influences exhausted the causes for the underpayment of home work, there would be scarcely any hope for a remedy in legislation; but an equally important reason is the unorganized, unprotected condition of the weaker industrial classes who enter such occupations which expose them to heartless exploitation. This is indicated by the variation of wages for the same work in these industries. Such differences do not apply exclusively to home work. They are found in factories also, and will be considered later in the general discussion of wages. But it is in case of outworkers more particularly that they allow the pay of some to fall below the subsistence level. An investigation in Glasgow recently showed the following rates paid for similar work by different firms:

PIECE PRICES PAID TO HOME WORKERS IN GLASGOW BY DIFFERENT FIRMS FOR CERTAIN KINDS OF WORK.

Kind of work.	Unit.	Piece price paid by—	
		Best firms.	Other firms.
Shawl fringing	Dozen.	\$0.47	\$0.37
Cheap shirt finishing	do.	.07	.08
Girls' underclothing	do.	.18	.08
Finishing pajamas	do.	.37	.16
Ladies' underclothing	do.	.85	.37

Where there is an essential difference in the quality of the work, piece rates properly vary; for a worker can often earn more doing coarse or hastily-put-together articles at a low rate per dozen than in making expensive garments, requiring more care, at a much higher rate. But in the cases quoted the work is understood to be substantially the same where the higher and the lower scales prevail. The wide variation in rates of payment is due partly to the ignorance and partly to the needs of the workers, which prevent their informing themselves of the conditions of work at different establishments or from protesting against underpayment where it is known to be below the customary rate. In fact, some of these workers are not informed beforehand of the price they are to receive for their labor. Note the following examples, instanced by the research committee of the Christian Social Union:

(1) Brush drawer A. Is a bristle sorter. Does not know how much per pound she will be paid until she takes home the work.

Payments range from 5d. to 7d. [10 to 14 cents] per pound. To sort one pound of bristles takes about three hours.

(2) Brush drawer B. Is a worker in toothbrushes. Payments arbitrary, "according to mood of employers." If inferior bone is used payment is always lower, though there is no variation in the amount of work required.

(3) Tarpaulin, tent, and sack work. Workers know nothing of the price to be paid until they have the work in hand.

(4) Making cadets' pouches. Inworkers never know what they will be paid for work beforehand.

Sack makers receive 5d. to 7d. (10 to 14 cents) a dozen, and to make a dozen is a day's work. In making baskets the net earnings are 9d. (18 cents) a day.

For making cadet pouches a worker received 2s. 6d. (61 cents) for a week of 54 hours. At toothbrush making a worker employed all of every day, including Sundays, sometimes earned 7s. (\$1.70) a week; but more usually earned between 5s. 6d. and 6s. (\$1.34 and \$1.46). For making the walls of a tent, 16 yards long, with 58 holes to make and 110 eyes to sew on, a worker is paid 9½d. (19 cents). It takes the whole day to finish one tent wall.

The proportion of outworkers who belong to this poorly paid class is large, but by no means includes their whole number. In some industries outwork is subsidiary to and coordinated with factory work, so that employment is regular and the rate of pay approximates more nearly that of factory hands. In centers of specialized industry these wages are relatively high. Londonderry is the center of shirt making for Great Britain, and here the industry is organized primarily upon a factory basis. In the factory they cut, make the trimmings—collar and wrist bands, bosoms, etc.—and hem the body of the shirt. The partially completed garments are then sent in various directions—sometimes 60 miles into the country—to home workers, who seam the sides, stitch on sleeves and trimmings, and make the buttonholes. There are about two outworkers for each factory operative. Women earn more than men, and though wages are generally lower in Ireland than in England, Irish shirt makers are better paid than those of Great Britain. In the factories learners begin at 4s. (97 cents) a week and earn as sewing-machine operators about 10s. (\$2.43) weekly. Ironers and turners are paid more. Outworkers are paid by the piece, the rate for making up a dozen shirts varying with their quality from 2s. 6d. (61 cents) to 4s. 6d. (\$1.10); and a family of four, working when not engaged in household duties, will make up 12 dozen in a week. This would make the average earnings presumably about the same as in the factory. A similar system of making gloves prevails at Yeovill, where the condition of outworkers is said to be unusually good. In both these cases the work is done largely in country cottages, where the money

earnings of the family are supplemented by the produce of a garden and perhaps a cow or two, and the workers possess considerable skill. In the London clothing trade many factory firms pay their inworkers and outworkers the same rate, though some pay outworkers less. In both cases piece rates are paid, and the best work is usually done in the factory. It is said that some outworkers earn more than factory hands, because they work longer hours; but this is found to be true only in a few favored instances, where the outworker has a room apart from the family, where she can work undisturbed and without household interruptions. Factory operatives are more regularly employed than outworkers, since they are more apt to be kept on during the slack season. There are two classes of middlemen in this trade, the man who rents a shop in a district where home workers are abundant, from which he distributes work, receiving the work from a manufacturer in a different quarter of the city; and the contractor who has a workroom in the factory of the manufacturer. The former has some reason for existence, because by handling goods in quantities he saves on transportation between the workers and the manufacturer and thus greatly economizes the time of the workers, which would otherwise be lost in going a long distance to get and to return the parcels of work allotted them. The contractor performs no service, except in getting a greater amount of work out of his hands for a certain amount of money than would the manufacturer himself, and it is to these contractors that some of the worst sweating in this trade is due.

In the manufacture of artificial flowers, an industry somewhat depressed by foreign competition, factory hands, in addition to having more regular work as a rule, earn in London from 9s. (\$2.19) to 40s. (\$9.73) a week, taste and skill largely affecting the pay of this class of workers. Competent hands average between 15s. (\$3.65) and 22s. (\$5.35) a week. Outworkers can engage only in the least profitable parts of this occupation, and a large proportion of them earn only 1½d. or 2d. (3 or 4 cents) an hour. The following instances are given:

- (1) Earning 4s. to 5s. (97 cents to \$1.22) a week making poppies and common flowers.
- (2) With help of her children earning 12s. (\$2.92) a week and paying 4s. (97 cents) rent.
- (3) Rarely makes as much as 6s. (\$1.46) a week.
- (4) Could earn from 6s. to 10s. (\$1.46 to \$2.43) a week by working 14 hours a day.

Here the great disadvantage of the outworker, in respect to wages, is due to the character of the work. In the case of embroidering, which is a separate trade of some importance in London, girls who have gone through a regular apprenticeship in a factory usually leave at the expiration of this time to become outworkers. The work

is not seasonal, and employers say the girls prefer outwork because it permits them to work longer hours. Earnings inside and outside the factory are said to be about equal for equal time. In this trade skill counts, as it does in making artificial flowers, but there is no division of the work by which only the poorly paid grades are done outside the factory. Similar in these respects to the embroidering trade is burnishing silver and fine metal goods, which at Birmingham is largely followed in their homes by girls and women who have served a long apprenticeship in a factory or under an experienced home worker. This trade pays good hands from 12s. to 20s. (\$2.92 to \$4.87) a week, or about the same as embroidering.

The industrial outworkers of Birmingham have been classified in two groups: Unskilled, who are chiefly employed in carding hooks and eyes, buttons, and small hardware, and in packing pins and hairpins and the many small articles of metal manufactured in that city; and skilled workers, who are engaged principally in paper-box making, leather work, brush making, polishing and burnishing, and sewing, and as sewing-machine operators. The unskilled work does not pay enough to support a family and is followed as a rule only where there are children helpers or where the husband provides part of the income of the home. The same is true in a considerable measure even of the skilled occupations, and except in burnishing and in one or two similar trades, where a long training at low wages is necessary, few outworkers earn over 10s. (\$2.43) a week. In Birmingham outwork is said to be on the wane:

Home work is decreasing in most trades. Unless the worker is an old factory hand who has left to get married, the employer of to-day grows ever more disinclined to take the risk of giving work to be done away from his supervision. It is an extravagant system, which has its advantages when adopted to meet a sudden press of work to accommodate which the factory premises are inadequate, but giving out the work in small quantities, and fetching and carrying involve a great waste of time and effort, which does not fall only on the employees, though it falls on them most heavily.

Some employers have experimented with a regular delivery system for sending out and collecting work done outside their factories. But this proved a failure, because the workers were so irregular that it could not be told when new work was wanted or when completed work was ready for return, and so many useless calls were made that the expense was too great for the employers.

Home work has some domestic advantages that ought not to be overlooked. Sanitary inspectors report that in corresponding districts the houses of outworkers are cleaner and neater and the children in them are better cared for than in the homes of women who work in factories. In Birmingham the report of a private investigation

shows that "the homes among these workers almost always attain a relatively high standard. The records of dirty or ill-kept houses are rare, though in the case of women who are dependent on their work there is naturally something to be desired in this respect." But quite a different story is told of the homes of many outworkers and sweat-shop premises in London. Infant mortality is said to be less among home workers than among factory workers, providing other conditions are equal. Among the glove makers of Yeovill this mortality is less than the average in England and Wales, or 89.74 as compared with 118 per thousand.

With regard to the low wages paid some outworkers, the defenders of the system say that the recipients—poorly off as they are—would be in a worse condition without this recourse. The proportion of aged and invalid persons in these trades is larger than in factories, and in some instances it is possible for a home worker to assist in supporting a blind or crippled relative, who would have to be cared for in a public institution if the worker were in a factory. And there are many cases where these low wages help to supplement the poor relief, which would be the only recourse of the worker, if the sole alternative to such relief were factory employment.

In England boot and shoe making has not yet been completely centralized as a factory occupation as it has been in America, and the condition of shoemakers in districts where outwork on an extensive scale still continues suggests some of the compensations that factory employment offers in place of the greater freedom of the older form of domestic industry. In the first place, the whole family works, the children from 7 or 8 years of age assisting in "closing" the boots. The work is carried back and forth between cottage and warehouse by women. Domestic duties are neglected, since wages naturally continue low where so many cooperate to support the family, and the wife, therefore, has to dismiss home duties to assist her husband. The home is half residence, half factory; food is bought at a cook shop, the clothing is ready-made and generally poor and expensive; the husband works irregular hours, usually rising late mornings and making up by plying his trade until the small hours of the night. "The living wage, instead of being earned by the head of the family, is split up into four, five, and six parts, and absorbs the energies of wife and children."

These are some of the many-sided aspects of home work in Great Britain. A selection might be made of evidence showing outworkers earning \$4 or \$5 a week who support families and keep comfortable homes by working at trades that are usually considered either fields of unalleviated industrial oppressions or unsuitable occupations for women. There is the old file cutter, from Birmingham, who testified before the parliamentary committee last summer that she had fol-

lowed this business in her home for 36 years, and while following it had grown from a weakly girl to a healthy woman with a family of sturdy children. She earned 4d. or 5d. (8 or 10 cents) an hour, and wanted only to be let alone. There is a Home Workers' League in England, founded 7 years ago to oppose legislation regulating this form of employment, containing some 3,000 worker members. These fear that wage boards and other proposed reforms will drive the work into the factories and thus deprive them of a livelihood. But meantime the earnings of large numbers of sweated workers are "insufficient to sustain life in the most meager manner"—and this condition the Government proposes to remedy so far as it can be done by public means.

Several suggestions have been made as to how a minimum wage for this class of workers might be determined and enforced; but all the proposals that have attracted serious attention provide for wage boards similar to those first organized in Victoria and now adopted in nearly all the Australian States. Each board would consist of an equal number of representatives of employers and employees, under an impartial chairman, with authority to establish prices of work, by time and by the piece, for the workers of a particular trade in a limited district. It is generally proposed that the factory and shop inspectors should enforce the wages and associated conditions of employment thus established. In Australia this system has upon the whole worked successfully, and in that country seems to be displacing the older method of compulsory arbitration, by which a court determines conditions of employment. In 1907 the British Government caused an investigation to be made of the working of the Australian laws, including compulsory arbitration, and the representative of the Government, while commending the influence of this legislation in the countries where it originated, did not advise its adoption in Great Britain. Passing by compulsory arbitration as going beyond present proposals, his objection to introducing wage boards, as existing in Australia, centered upon the difficulty of enforcing a legal minimum wage. This would be much greater in the mother country than in her colonies, because of the great population and vast urban districts, containing workers of every degree of aptitude and capacity, and of every industrial age, all of them subjected to unprotected competition from foreign workers. The practical impossibility of preventing collusion between masters and workers to evade the established wage—an embarrassment even in Victoria—the whole problem of the incompetent worker and of juvenile hands and learners, the territorial differences of conditions within England itself affecting competition between districts, were all cited as obstacles to the successful application of the law. Nevertheless, it was thought that a system of

special boards to supervise conditions in each natural industrial and territorial unit, officially recognized and coordinated by the Government, might be established for the purpose of securing more uniform conditions of employment and preventing some of the greater evils of sweating. The report proposed that the determinations of these boards should not be legally binding, and that their intervention should be of an advisory rather than of a compulsory character.

This report was considered by the parliamentary committee, which investigated the condition of home workers in Great Britain and submitted its recommendations in 1908. The committee, supported by the Government, has come to the conclusion that wage boards, in spite of this adverse report, promise enough improvement to justify their being tried as an experiment in some industries. After reviewing the oppressive conditions affecting outworkers and the need of an immediate remedy or palliative, the committee made three recommendations for the correction of these evils—compulsory registration of workers, wage boards, and a minimum wage. The first measure would be in part preliminary to the others, because only registered workers could select the labor members of the wage boards in their respective trades, and the enforcement of the board recommendations would be made easier by thus knowing to whom they applied. The substance of the committee's report in this connection is:

That all home workers who are employed by other persons in producing or preparing articles for sale should be required to register their name, address, and class of work at, and receive a certificate of such registration from, the offices of the local authority, and that the keeping of accurate outworkers' lists by employers should be strictly enforced.

That it should be an offense for any person to employ any home worker to produce or prepare any articles for sale by another person unless the worker produce a certificate of registration.

The recommendations as to wage boards are essentially the same as those already suggested. The committee would make it an offense to pay or to offer to pay a lower rate than that prescribed by the board in that particular trade and district. The recommendation as to a minimum wage is further elaborated as follows:

That there should be legislation with regard to the rates of payment made to home workers who are employed in the production or preparation of articles for sale by other persons.

That such legislation should at first be tentative and experimental, and be limited in its scope to home workers engaged in the tailoring, shirt-making, underclothing, and baby-linen trades, and in the finishing processes of machine-made lace. The home secretary should be empowered after inquiry made to establish wage boards for other trades.

That the delivery and collection of work done at home should be done by persons in the direct employ and pay of the employer. Where that was not done, the amount which a worker could earn in a specified time should be calculated on a basis which included the time spent in fetching and returning the work as time occupied in doing the work.

The committee further recommends that the factory inspectors be made responsible for the enforcement of the law and of the wage-board determinations, as well as of the Truck Act and sanitary regulations applying to factories, which should be extended to all home workers and their tenements.

These recommendations mark the limit of proposed factory legislation, and, of course, are not yet realized in law and are still further from practical application. They purpose to attain by government intervention what in more highly skilled industries has been attained by trade unions and similar organizations. They recognize the responsibility of society for the welfare of the weakest workers, and the right of all to at least a living wage. Sooner or later the principle of these proposals, in this or another form, is pretty certain to be put into force in Great Britain.

SOCIAL AND ECONOMIC EFFECT OF LEGISLATION REGULATING THE EMPLOYMENT OF WOMEN AND CHILDREN.

In résumé, the present British legislation governing the working conditions of women and children consists of the factory and the mines acts, with coordinate local regulations affecting their application in particular districts, and the Employment of Children Act of 1903, relating to the work of children in occupations outside of factories and mines. Women engaged in occupations not regulated by the factory and mines acts (excepting shop assistants) are still without government supervision; but this it is proposed to remedy by wage boards. Outside of this main body of legislation are other industrial laws of great importance, notably the Workmen's Compensation Act, but these lie without the limits of the present discussion.

In considering the influence of this legislation upon the condition of workers, four groups of questions suggest themselves: What has been the effect in obtaining the specific object of particular provisions, such as shortening the hours of labor? What has been the effect upon conditions of employment not the direct object of legislation, such as the wages of women and children, and the relative employment of women and men in different industries? What has been the indirect and general influence upon the social well-being of women and children workers? And, finally, What has been the effect upon industry?

EFFECT OF PROVISIONS SHORTENING HOURS OF WORK.

No one questions that hours of work in factories are shorter at the present time than they ever were previously; but it is more difficult to determine whether they have been shortened by legislation, and if so, to what extent. And here two distinctions need to be made at the outset—between the average and the abnormal day in all establishments and between the average and the abnormal establishment. For instance, in a clothing factory the average working hours throughout the year may be 54 a week; but during the spring and autumn these hours, unless regulated, may rise to 66 or 72 a week. Likewise, of several boot and shoe factories a majority, and those generally the largest and best establishments, may have a 54-hour week, while a number of small shops, ranking as factories under the law, may work their hands 60 hours a week. Furthermore, of a number of clothing factories, several may be able to keep very near the 54-hour weekly average throughout the year, while supplying the same trade and competing successfully with factories that work short hours some months in the year and excessively long hours the remaining months.

These time variations, as well as the wage variations described later, found in competing industries in the same vicinity, indicate a margin within which the condition of workers might be improved without increasing the maximum labor cost of production, so as to raise the market price of the articles manufactured. For it is not reasonable to suppose that mills which regularly work fewer hours at higher wages than establishments which compete with them are working at a loss. Indeed, they are generally making a satisfactory profit. If so, it follows that the other establishments are either making an excessive profit out of their employees or that they are operating under uneconomic conditions. If the entire production of the articles in question could be centered in the best-organized mills, the articles could be sold at the same price, and the workers enjoy the advantages of shorter hours and higher wages. So far as legislation is able to hasten the uniform application of these superior conditions of production in any industry, by requiring the conditions observed in the best mills to be enforced in all, it is serving the workers without taxing the rest of the community, unless it be a few incompetent, overgrasping, or it may be merely unfortunate employers. English factory legislation—at least the modern acts—has followed the principle of bringing average conditions of employment up to the best conditions of employment in each industry. Consequently there are often a number of establishments that are not affected by the new amendments when these are made, because they represent the best existing

conditions. Workers in such factories are directly little affected by the law, but indirectly they may feel its influence through improved conditions in other factories, where they may have friends or relatives employed or where they may some time be forced to seek employment themselves.

Another preliminary qualification needs to be made before discussing in detail such evidence as exists as to the effect of the factory acts upon hours of work. During the past century there appear to have been a number of economic influences besides legislation tending to reduce working hours. An obvious one has been the efforts of organized labor. The maximum hours of organized trades not regulated by legislation are fewer than the maximum hours permitted in factories. The greatest number of hours worked in the building and engineering trades is $56\frac{1}{2}$ weekly, and in some engineering occupations it nowhere exceeds 54; while in many towns in all these trades the hours are fewer than this maximum. In the various branches of furniture making the unions have reduced working hours to 56, though the factory act still allows 60; and in the printing trade, largely through the same influence, 54 hours now constitute the maximum working week. In some industries, notably the cotton trade, men and women belong to the same union. In London men and women cigar makers belong to the same union. In the Liverpool upholstery shops a strong women's union has reduced hours from 55 to 50 a week. Even where women and children do not belong to trade unions, they sometimes benefit by the shorter hours obtained by these organizations on account of the correlation of their own work with that of men. In Liverpool the men's unions in the printing trade, by reducing working hours from 59 to 51 a week, have caused the same reduction in the hours of women workers. Perhaps, also, there is an imitative tendency toward fewer hours, induced partly by competition for labor, so that when a short working day is established in several trades it becomes more difficult for other industries or factories in the same vicinity to maintain an excessive working day.

A second influence in favor of a shorter workday has been the improvement of machinery. Where highly perfected and rapidly working automatic mechanism is used, handling a large amount of material in a limited time, manufacturers find it unprofitable to over-fatigue their workers. In industries as different as soap making, button making, and dry cleaning, too long a working day has proved uneconomic. If continuous processes are used three shifts of labor give better results than two shifts. In factory industries probably there are other direct causes of the voluntary tendency toward shorter hours, among which may be counted awakened social sympathies and an educated public opinion. But without attempting to enumerate

these further, the tendency itself is well established. It is sufficiently indicated by the fact that with every recent shortening of the legal hours of work by amendments to the factory act establishments have been found voluntarily working still fewer hours.

The probable effect of the factory acts has been to shorten average hours in most establishments in most industries and in all establishments in some industries, for, although some factories may work fewer than the legal hours, the possibility of their doing so depends upon competing factories not working more than the maximum of hours permitted by the law. When the law limits hours to $55\frac{1}{2}$ a week, factory A may work 50 hours and factory B $55\frac{1}{2}$ hours and still be in competitive equilibrium. But if it were legally possible for factory B to work 60 hours weekly, factory A would be compelled to work 54 or 55 hours to maintain the same equilibrium.

Shorter hours for women and children mean in many cases shorter hours for men also. It is because they perceived this that prior to 1850 workingmen supported so actively the movement for a ten-hour day for women and children in textile factories. But this result does not necessarily follow in all industries. In Liverpool a private investigation showed that in ropewalks, in small printing establishments, and in watch factories men sometimes carried on women's work after the legal hours of the latter had expired. Where work of men, women, and children is not correlated—that is, where they do not respectively conduct different portions of a continuous process of manufacture—the hours of men are affected only indirectly by those of their collaborators. Now, though the hours of work of men are not regulated by the factory act, they do not upon the whole differ materially from those of women; but there are several industries, such as printing, for instance, in which men and women work together in operations not always closely correlated, where men are employed (at least in the busy season) longer than women. Furthermore, formerly when, on account of the small number employed or for other reasons, some factories in a particular industry were exempted from inspection, the hours of labor were often longer in the exempted than in the inspected factories. Finally, more particularly in the earlier stages of this legislation, in some trades a provision of the factory act shortening hours has been observed to have a direct and immediate influence upon the working day throughout the industry.

In Liverpool an investigation of the conditions of women's work indicates that the factory laws ceased to be the main influence in shortening hours of labor after 1867, "and that since that time the reductions made in the normal hours of work are not to be ascribed to the factory acts, but to the manufacturers themselves, who, in many cases, recognize the economy of short hours, and to trade-union action." In Birmingham, during a similar investigation, it was found

"that the acts of 1864 and 1867 introduced changes, and did not merely enforce what was customary before, though in one or two cases the act was anticipated to some extent." But when the law of 1876 was introduced, still further reducing hours, "the evidence proves that generally the hours worked were less than the 56½ proposed by the new act." However, in that city (and we shall see that this applies as well to other places) the time prescribed by law, within which the hours of work should lie, caused the actual working day to be still further shortened, because it was impossible to get girls and women to the factories soon enough to work the full limit. As the Birmingham investigators say: "The conclusion seems to be that legislation has shortened hours by making women cease work earlier than they would have done, while they refused to start any earlier."

In Liverpool textile mills are the only establishments employing women on a large scale that do not work fewer hours than those permitted by law. Match factories work an hour daily less than this limit. It will be remembered that the legal hours in nontextile factories are now 60 a week, or 10½ hours on 5 days and 7½ on Saturday, while textile factories work 55½ hours a week. The conditions in some other trades are as follows: In clothing factories the London working hours average 8½ on 5 days, with the short Saturday, the girls usually going to the shop at 9 a. m. In Birmingham the working hours average about 9 a day, it being a matter of general experience "that longer hours deteriorate the quality of the work, and where power machines are used the power is too valuable to be provided for slack or tired workers." In Liverpool, in four clothing factories, the hours of work were as follows: 8.30 to 6, 9 to 6.30, 8 to 6, and 8.30 to 5.30. On Saturday work ceases at 1 or 2.30 p. m. An hour and a half is allowed for meals. In the tobacco trades, the London cigar makers, who are on piecework, average 8 hours a day; in Liverpool, where other forms of tobacco are also extensively manufactured, a 50-hour week is a long-established custom of the trade. In a number of London establishments manufacturing embroidery the hours are 9 to 9½ a day, with 4 or 5 hours on Saturday, work generally beginning at 9 in the morning and ending at from 6 to 7.30 in the evening, in different establishments, with 1½ hours for meals. In millinery shops the hours are often longer, extending from 9 a. m. till 8 p. m., except for apprentices, while a few places begin at 8.30 or 8.45 a. m. During the busy season some of the employees are kept till 9 p. m. In the Liverpool confectionery factories employees work 52½ hours a week. Women French polishers have hours "somewhat shorter than are allowed by law." In a large dry-cleaning and dyeing establishment, at Liverpool, the hours of women have been successively reduced from 56 a week to 53, and at last to 48, "not

from any philanthropic motive, but from a business point of view," because "the work people put more energy into their work and take more interest in it if their hours are short." Of two Liverpool soap factories, one reduced hours from 50 a week to 45 in 1897, though men still work 48 hours, and the other has worked its employees only 39 hours a week since its establishment over 30 years ago.

These factory hours, though not affected by law, form a remarkable comparison to those of saleswomen and other shop attendants, who generally work over 60 hours and often as much as 70 hours a week, and with those of home workers, who define "sitting all day" as steady work from 8 a. m. to 11 p. m., minus only the most necessary household interruptions.

Though in many factories the later laws have not reduced hours of work, they have exercised an important influence in making these hours more regular. Irregularity is due principally to two causes, both of which are in great part remediable. The first is the bad working habits of the operatives themselves. In the old days workmen would lay off the first part of the week and then try to make up wages by excessive hours just before pay day. This is still an evil where manufacturing is carried on in the homes. The second cause is the seasonal demand for goods in some industries, which presses manufacturers for heavy deliveries at certain times of the year. They used to meet this by putting on extra employees, sending work to outworkers, and by overtime. These were uneconomic expedients, and under the influence of the factory regulations a better distribution of work throughout the year has in many trades already been accomplished. Of course when factories are working fewer than the maximum number of hours allowed by law, they may employ women and children up to that maximum, in case of emergency, without restriction. This is done in many instances. In addition there is the overtime, above the normal hours prescribed by the act, for which special provision is made in the statute. The latter kind of overtime is becoming rare. For one thing, factory accommodations are more adequate than formerly, so that extra hands can be taken on when needed. This causes some irregularity of employment for these temporary employees; or rather it might be said that they are given an opportunity for employment that would not exist if the regular hands worked longer hours. In the second place, factory administration is now more intelligent than heretofore, elements of cost are more closely watched, future markets are more confidently and accurately estimated, all of which make it more economical to anticipate the stress season by preparing in advance for its demands than to allow work to accumulate and introduce confusion into the factory organization. This effect of the factory laws first began to be felt strongly after the act of 1867 was passed, and represents the

second phase of the influence of this legislation upon hours of work. The operation of that statute has been thus described :

The great effect of this act stipulating a normal day was to lessen irregularity rather than to lessen hours worked per week, for even before 1867 the hours of work in a week often would not exceed 60. The need for alteration was not so much due to the number of hours as to the irregularity of work. At times of pressure employers worked their employees any number of hours they pleased, and the irregular habits of the work people themselves often compelled employers to work long hours to make up for lost time.

In case of children the immediate effect of the early factory laws in shortening their period of labor was unquestioned, and these laws continue to be influential in preventing too long hours. Even recent amendments, applying to particular trades, have had a direct effect in lessening overwork. This applies more particularly to boys working in company only with men, where without legislation there would be a tendency to approximate their hours to those of unregulated male employees. The provisions applying to glass works, blast furnaces, paper mills, and printing houses, especially those governing night work, are of this character.

Even where hours of work are shorter than those permitted by law, the factory acts applying to them still serve a purpose. The poor economy of excessive factory hours is now understood; but it is a truth that has to be learned anew by so many employers, and there are so many particular and temporary exceptions to its general application that abuses, though infrequent, can be checked only by statute. Laundries have recently been made subject to factory regulation. Evidence showed that prior to this women were obliged to work in them beyond normal hours, and occasionally even to the limit of physical endurance. And while legislation is not the sole cause of the shorter working-day of women and children, and might not have secured this end without other assisting influences, it has been a potent cause, and without this legal intervention conditions in some industries might not have improved materially during the past century.

INFLUENCE OF THE FACTORY ACTS UPON THE WAGES OF WOMEN AND CHILDREN.

It is no longer argued by people familiar with industrial history that shorter hours necessarily mean lower wages. But this argument was used extensively when the earlier British acts were passed. Here again, as in case of the shortening of hours, it is difficult to separate the effect of state regulation from the effect of other causes, but the upward tendency of the wages of women and children during the past century is a matter of statistical verification. The following

table gives the most authoritative statement of the increase of the wages of women since 1820. The table shows the average relative wages of all women wage-earners, by decades, as stated in percentages of the average wage during the ten years ending with 1900. To show that there was more than a normal increase in women's wages, as compared with the wages of unregulated men's labor, the relative wages of workers of both sexes combined, using the decade ending with 1900 as the base, is given in a parallel column.

RELATIVE WAGES IN THE UNITED KINGDOM, 1820 TO 1900.

Decade ending—	Relative wages of—	
	Women employ-ees.	Employ-ees of both sexes.
1830	58	65
1840	56	60
1850	58	60
1860	62	65
1870	75	75
1880	98	96
1890	96	90
1900	100	100

Between 1830 and 1850 women's wages may have declined less than those of men because they were already near the subsistence level. An English authority, to whom these statistics are due, says: "Factory legislation has not lowered wages, but has been accompanied by a decided and progressive increase." It is not to be understood that factory laws are given as the cause of this increase, but they may have contributed to it by improving the efficiency of workers.

The wages of women in industries regulated by the factory acts are generally better than those in unregulated industries. Among the best paid women factory workers of England are the cotton operatives of Lancashire. This condition, however, is probably less an effect of the law than of the fact that the law happens to apply to a better grade of workers. There may be a more or less persistent ratio between the wages of men and those of women and children in the same industry (though this can not be shown in many industries), and if this is so the latter are indirect beneficiaries of the trade-union movement, which has raised the pay of men. Such results naturally follow when unions include both sexes, as in the Lancashire weaving factories. When the men's union and the women's union of London cigar makers amalgamated some years ago, women's wages were fixed on a scale the basis of which was the highest rate of pay then existing for women. Since amalgamation women's wages have risen 25 per cent or more, though the wages continue to be less than those of men. When women are unorganized there is less evidence that the presence

of men's unions in the same industry influences their wages, though this has probably been the case in some instances. The product of labor has been greatly increased by the improvement of machinery, and a share of this increased product has been received by the wage-earner. Without these two favoring conditions the reduction of hours caused by the factory acts might have been accompanied by stationary or falling wages; but this is a speculation impossible to verify. Trades may be mentioned, like some kinds of decorating and polishing, where neither machinery nor labor unions have influenced conditions, in which wages have risen as working hours grew fewer. But workers in these trades were benefited by the rising standard of living of their fellow-workers in other industries, and their rate of compensation was affected by the competition for labor caused by high wages in other occupations.

The statistics available indicate that the enactment of the successive laws shortening the hours of labor did not, in the particular industries affected, interrupt the progressive improvement of wages that has marked the last century. In 1819 the hours of children working in the Glasgow cotton mills were reduced from $12\frac{1}{2}$ to 12 a day, but there is no evidence that wages were lowered. After the act of 1833 the rates of pay of children and women workers at Oldham increased; but this may have been due to a revival of manufacturing during the next three years. The act of 1844 was very important, as extending regulation to women and to all employees under 18 years old; and there was no material change in the prosperity of the cotton industry immediately afterward to increase or depress wages. The statistics show that the reduction of hours of these classes of operatives, from 72 to 69 a week, did not reduce their earnings and that in some cases, for example power-loom weavers, the earnings increased. The acts of 1847, 1850, and 1853, limiting the hours of women and young persons to 10 and $10\frac{1}{2}$ a day, affected all operatives in the cotton manufacture. The reduction amounted to about one-seventh, or was from 69 hours to 58 or 60 weekly. Unfortunately during these years there was a serious trade depression, affecting all manufacturing industries quite independently of legislation. This caused the factory owners to make a general reduction of 10 per cent in the pay of employees. Though the earnings of cotton operatives at Manchester fell off in 1847, when this reduction went into force, they did not decrease permanently even the full 10 per cent the lessened piecework rate would have justified, to say nothing of the 16 per cent corresponding to the shorter time worked. In the report of the factory inspector for 1850 statistics of the earnings of 31 weavers are given, showing a reduction of average weekly earnings in 1847 from 11s. 8d. to 10s. 6d. (\$2.84 to \$2.56) a week. This is exactly what the 10 per cent reduction in piecework rates would amount to. But indicating the reduction of

earnings in weekly percentages, the difference between them and those earned before 1847 continues to grow less. In November, 1848, wages varied from 14.5 to 11.3 per cent under those paid in 1845, while in May, 1849, they ranged from 8.5 to 6.4 per cent less than under the former long hours and higher piecework rates. If the old and higher rate of payment had still remained in force, therefore, weavers would have earned more in 1849 working 58 hours than four years previously working 69 hours. Immediately after the passage of these acts operatives in Yorkshire and other woolen districts found their earnings reduced, but these earnings rapidly rose again as workers became adjusted to new conditions and increased the intensity of their labor.

The act of 1860, extending shorter hours to bleaching and dye works, was followed in Dundee, a center of the flax industry, by a reduction of earnings in 1861, but by an increase exceeding this reduction the next year, repeating the experience of the Manchester operatives in 1847 and 1848. Passing to the law of 1874, because the evidence as to the influence of intervening acts is clouded by trade conditions and unsupported by adequate statistics, there are abundant tables of wages showing that the reduction of hours from 60 to 56½ a week, which then took place, and raising the ages of full timers to 14 years, was not followed in Manchester by a fall in wages, and that even in the depression of 1880 earnings remained higher than when the act was passed. In the Dundee jute mills time wages were reduced as a result of the act of 1874, but this was followed by increases that amounted to 10 per cent by 1892. In these mills the pay of half timers rose immediately, apparently because the law reduced the supply of this labor.

If the factory acts lowered wages in any industry it probably would be in the textile mills; for these, as a rule, work nearest the maximum time allowed by law. An act reducing hours in an industry where neighboring factories present the time differential already noted might be expected to have less effect on wages, for employers already working as few or fewer hours than the new law allowed would have no motive in that law for reducing time wages, and pieceworkers would not be affected. Speaking of Liverpool, Miss Harrison, who investigated the condition of women workers in that city, remarks: "It is said that the reduction of one hour by the act of 1901 in textile factories made no difference in wages which are paid by time and no perceptible difference in piecework earnings." Stitchers in a bookbindery receive 14s. or 15s. (\$3.41 or \$3.65), where formerly they received 8s. and 10s. (\$1.95 and \$2.43). In a large soap factory wages have risen about 12 per cent in the last 30 years. In rubber factories earnings have increased, while the piecework rate has for some years been stationary.

The fact that there is a wage differential, like the time differential mentioned, in neighboring and competing factories, also makes it less likely that a legal reduction of hours will affect wages. In the different Leicester boot and shoe factories the following variations occur in rates paid for similar work:

WAGE VARIATIONS AMONG WOMEN OPERATIVES IN THE LEICESTER SHOE FACTORIES.

Occupation.	Rates of wages of women in—	
	Best factories.	Poorer factories.
Operator on silking machine, piecework earnings per hour.....	\$0.09	\$0.08
Operator on vamping machine, piecework earnings per hour.....	0.08	\$0.02 to 0.05
Fitter..... weekly wage.....	\$3.65 to 4.87	2.19 to 3.41
Machinist..... do.....	3.89 to 4.87	2.43 to 3.89
Silker..... do.....	3.89 to 4.62	1.70 to 3.16
Vamper..... do.....	3.89 to 4.87	2.43 to 3.65
Closer..... do.....	3.65 to 4.38	1.70 to 2.92
Buttonholer..... do.....	3.89 to 4.62	1.95 to 3.16

This lack of uniform wages occurs also in different textile factories. The Dundee Social Union, in investigating the condition of mill workers in that city, found that there was—

a considerable difference in the rates of wages paid by (different) employers. Further, it is common to find that where the general level of wages paid by two different employers is the same there is yet considerable disparity between the rates paid for particular processes. * * * The wages commonly paid in different mills for preparers varied from 14s. to 8s. 11d. [\$3.41 to \$2.17] for men, and from 12s. 2d. to 8s. 10d. [\$2.96 to \$2.15] for women; those for male shifters varied from 10s. 3d. to 8s. 9d. [\$2.49 to \$2.13]; for female shifters from 10s. 4d. to 7s. 2d. [\$2.51 to \$1.74]; and for spinners from 12s. to 9s. 7d. [\$2.92 to \$2.33]. (Higher rates paid for an extra number of spindles have been disregarded.) These variations can not be explained by age distribution, as the processes concerned are paid by time, and shifting serves as an apprenticeship to spinning.

The complex influences affecting wage movements never have been, and probably never will be, fully analyzed. But the following data and suggestions will help to show further how utterly wages fail to conform to a uniform standard, and therefore how little likelihood there is that they have been radically influenced by legislation.

In most industries the relative wages of men and women appear to be little affected by sex competition. Perhaps this occurs to a greater extent in the textile trades than elsewhere. A statistical inquiry has shown that in different cotton manufacturing districts men's and women's wages vary inversely to each other. The wages of men and boys are lowest, compared with the wages of men and boys in the same occupations in other places, where men form the largest fraction of the total number of cotton operatives; and in the same

districts the average wages of women and girls are highest. But the same rule does not apply to the entire cotton industry at different periods. The number of women and girls for every thousand operatives has risen from 567 in 1861 to 620 in 1881 and to 628 in 1901; but the wages of female operatives have not fallen as a consequence. The cause of this inverse wage ratio in some of the Lancashire cities is probably the competition of men among themselves, due to two causes: (1) The half-time system fills the labor market with youths who have served in the mills in low-paid occupations which they have outgrown, but who, having no skilled trade, crowd the unskilled labor market, which thereupon becomes the measurer of the remuneration of mill workers, and (2) the exclusive pursuit of a single industry in these particular cities limits the variety of demand for male labor and crowds it into a single occupation. The same conditions obtain in the flax and jute center at Dundee. In that city, however, there is a lack of definition between men's and women's occupations that brings the two sexes into competition and directly depresses the wage of the former. In Lancashire this is avoided to some extent by labor organizations. Mule spinning and throstle spinning are mostly confined to men, while the ring spinners are women. In weaving there is not the same separation, but the heaviest and most highly paid work is generally done by men. In describing conditions in this district an investigator says:

The various organizations of weavers have, from the introduction of the power loom, always included women as members on the same terms as men. The piecework list of prices, to which all workers must conform, applies to men and women alike. But it is interesting to observe that the maintenance of a standard rate has resulted in a real though unobtrusive segregation. There is no attempt to discriminate between women's work and men's work as such. The uniform scale of piecework prices includes an almost infinite variety of articles, from the plain calico, woven on narrow looms, to the broad and heavy-figured counterpanes, which tax the strength of the strongest men. In every mill we see both men and women at work, often at identical tasks. But, taking the cotton-weaving trade as a whole, the great majority of the women will be found engaged on the comparatively light work, paid for at the lower rates. On the other hand, a majority of the men will be found practically monopolizing the heavy trade, priced at higher rates per yard and resulting in larger weekly earnings.

Men remain in this trade because earnings are comparatively high, and the earnings are high because there is a strong union maintained by men, though admitting women. In Yorkshire and other districts, where the union has broken down, men have largely left the industry. In cigar making, where the men's and women's unions have amal-

gamated, although there is competition between the sexes and piece-work is universal, the women's scale is 25 per cent lower than that of the men. Tables of comparative earnings of the two sexes in this trade show that the women's maximum is the men's minimum. Women also compete with men as compositors in the printing trades, though display and news work and other more difficult kinds of composition usually go to the men. Yet where the work is of identical quality, women work in London for 5½d. and 6d. (11 and 12 cents) the thousand "ens," while the union rate for men is now about 8½d. (17 cents) for the same amount. Men and women compete in French polishing, with the same difference in wages for similar work. Women received from 3d. to 5d. (6 to 10 cents) an hour, as compared with a man's 9d. (18 cents). Inquiries as to why this difference in rates existed, made by a social worker to a nonunion employer having both men and women in his shop, elicited the following responses:

"That is a question you must solve; I'm often puzzled about it." "Is there any difference in the quality of the work?" "No; I prefer women's work; they are more conscientious and take a pride in their work; they often get a finer finish and have a greater perception of detail and more delicacy of work." "Do they work less quickly?" "A little, but not appreciably, and that is quite compensated for by the excellence of their work."

However, women are used for the less profitable jobs, that take the most time, such as finishing carved backs of chairs and other "fiddling" work.

These trades, however, are an exception, and most women engaged in industrial work do not compete with men.

In Birmingham it is very difficult to get instances where men and women do the same work. * * * In the jewelry trade, the printing trade, as well as in miscellaneous trades, such as making swivels, studs, links, and medals, women do the lighter and more mechanical jobs. The finer work in the hook and eye and chain making is left to men, and men do all the important and principal parts in lamp making and japanning. In harness making, again women work on certain well-defined articles, though this trade is in a state of transition and women are in many cases supplanting men. * * * It is generally in the case of a domestic workshop, where a man employs his own family, that the usual division is transgressed.

Another authority says:

In most trades in which women are employed in Liverpool there is no competition whatever between men and women; the manufacture of tobacco, cigar making, lucifer-match making, the enameling of copper letters and disks, cap making, paper-bag making, dressmaking, and millinery are almost entirely women's trades. In jam, soap, and paint making, and in confectionery, the manufacturing process is done by men, but girls are employed for packing,

labeling, etc., and for the lighter branches of work. In rope making the preparing, carding, and spinning machines are tended by women, and the men do the actual rope making. * * * In india rubber works men do the earlier processes of preparing, washing, and cleaning the new india rubber; they also do the cutting out. The women are employed in cementing, lasting, and making up the shoes.

Thus in most industries the demarcation between men and women's work is clear and impassable, but in those trades in which changes in the division of labor have taken place, the tendency has been for the proportion of women to increase.

Two phenomena, therefore, stand out more prominently than any others in connection with women's wages, the employment of women in distinct and generally less skilled and more poorly paid occupations than those of men in the same industry—and, it may be added, their almost exclusive employment in the poorest paid industries—and their relatively lower wages when they do the same work as men. No serious attempt has even been made to attribute either of these facts in the first instance to the factory laws, and there is little evidence that those laws have had even a subordinate influence upon the relative earnings of the two sexes.

The wages of women are low, apparently, because they are women; therefore, any influence of the law in replacing men by women and vice versa has had little effect on the rate of wages paid the former. A British investigator says:

In the inquiry as to wages one of the outstanding facts elicited was that whenever women had replaced men the former always received a much lower wage, and that this wage was not proportionate to the skill or intelligence required by the work, but approximated to a certain fixed level—about 10s. to 12s. [\$2.43 to \$2.98] per week. The wage that the men previously received gave no criterion as to what the women would get, though as a general statement approximately correct, we may say that a woman would get from one-third to one-half the wages of a man.

This is not due altogether to women having a lower standard of living, for occupations engaged in by refined women whose living is comparatively expensive are often more poorly paid than rougher employments followed by women of a lower class whose expenses are not so high. Neither is it due entirely to the fact that many women are subsidized by their families and not responsible for their own support or that of others; for widows and self-supporting girls are often willing to accept the lowest wages. Yet both of these conditions have something to do with the question. Custom (though that itself has to be explained) is probably one of the most important immediate factors in the problem. It should be remembered that in earlier times, and at present throughout the Tropics and in most countries where there is little industrial development, custom rather than the

economic consideration of each individual's value as a worker governs the rate of wages. For instance, throughout Mexico to-day such conventional wages rule, and are only beginning to be broken up by American competition for labor. This seems still to be true of the pay for women's labor in Great Britain.

Employers can usually give no other reason for the actual wage than the fact that such and such a figure is what women usually get in Birmingham. And in all cases piece rates are fixed by reference to this customary wage of the district, and the rates reduced or increased till the wage earned by piecework approximates to what the girls expect to get.

Like the Mexicans, Filipinos, and Negroes, some women workers do not aspire to earn more than the conventional wage, and will work shorter time if their rate is raised. A Liverpool employer complained that "the girls were satisfied with 8s. [\$1.95] a week, and that if a girl made 12s. [\$2.92] in one week she would not turn up till the end of the following week." A lady expert investigating the cigar making trade in London reported:

Although the women workers have a scale of pay by which they should be able to make 20s. [\$4.87] and even 30s. [\$7.30] a week, yet they often do not care to exert themselves after they have secured what they feel necessary. As one girl put it, "I don't see what a girl wants more than 15s. [\$3.65] a week for. It's the men with families that want more. When I've earned my 15s. [\$3.65] I've done." A remark corroborated by wage books.

Yet back of this attitude there are other causes.

So long as a considerable body of women workers retain this attitude toward their earnings, it is of course more difficult for the more ambitious to raise their wages. The rate of pay in one trade is affected by the general level in all trades, and the competition that affects women is essentially that of their own sex. In women's trades, where no men are employed, such as dressmaking, millinery, embroidery, laundry work, and flower making, all of which are skilled occupations, wages are equally low.

One reason why women in Great Britain have not yet arrived at an enlightened sex consciousness as workers is that they lack the ability to form successful organizations. This is explained in several ways. One prominent woman worker says: "This inability to combine itself arises largely from the arrangement of women's lives, and the fact that their work does not take the first place in their minds." This is an important clue. Women occupy so largely the less skilled occupations in factories because they do not train themselves for more responsible positions. And they do not train because they do not expect to make factory work a life vocation.

Most of them look forward to marriage, where they will (to say the least) not be entirely responsible for the family's support. Employers do not care to take the trouble of training girls, because they think the girls would leave about the time they became most efficient. The same lack of ambition that characterizes the attitude of many working girls toward wages manifests itself in their attitude toward apprenticeship. The lithographers' union favors girl press feeders, because they make no effort to pick up the trade. In industry woman generally "has preferred to remain incompetent." The great lack of permanence of women workers as compared with men and the fact that a greater proportion of these workers are young affect both their average skill and their ability to organize. In a Liverpool factory the proportion of employees remaining after 10 years was in case of women 7 per cent, and in case of men and boys 42 per cent; of those who remained after 5 years the proportion of women was 22 per cent, and of men 64 per cent; and of those on the pay rolls 3 years previously the proportion remaining was, women 51 per cent, men 61 per cent. This employer stated:

The difference between the sexes in the matter of employment, so far as our experience goes, is that boys up to the age of 16 come and go with great frequency; after that age they remain permanent fixtures. With girls it is exactly the opposite. From 14 to 18 a very large proportion remain; after that age they are continually leaving, generally to get married, or for other domestic reasons.

The importance of this influence upon wages is suggested by the fact that married women, in spite of disabilities peculiar to their status, and especially that more of them relatively have to bear the burden of household duties after factory hours, generally receive higher wages. In the Birmingham cycle trade married women's earnings average 11s. (\$2.68), while the general average for women above 21 is 10s. 6d. (\$2.56). Employers state: "They are more independent and better skilled and therefore always get more on piece-work;" and, "Married women are in responsible positions, and are steadier and more skilled and so get better wages." Also, the influence of married women has been toward shortening hours. In the Lancashire spinning districts the wages of women average highest where the percentage of married women among the employees is greatest.

The following classified wage averages are from the Board of Trade Report of 1886, and, though not recent, are fairly representative of those prevailing in the textile trades during the succeeding two decades. A trade dispute in the cotton industry at present (1908) has put out of date the most recent information from Lancashire.

WAGES PER WEEK OF WOMEN AND GIRLS IN TEXTILE INDUSTRIES.

[From the Board of Trade Report, 1886.]

Industry.	Average wages.	Per cent of all women and girls whose full-time earnings were—				
		Under \$2.43.	\$2.43 and under \$3.65.	\$3.65 and under \$4.87.	\$4.87 and under \$6.08.	\$6.08 and over.
Lancashire and Cheshire cotton.....	\$3.51	10.7	44.9	32.0	12.1	0.3
Yorkshire and Lancashire woollen....	3.20	10.6	64.0	25.3	.1	.....
Yorkshire woollen and stuff.....	2.78	36.6	62.8	.6	.....	.....
West England stuff	2.60	45.3	54.7	.....	.....	.....

The higher wages in Lancashire in the cotton industry are due in part at least to trade unions, and woollen wages may be indirectly affected by cotton wages in that district. Earnings are higher in districts where the textile manufactures are most centralized and highly organized, and lowest where they are only a subsidiary industry.

In Dundee an investigation made in 1904 showed the following wages paid women workers in the jute and flax mills of that city:

WOMEN'S WAGES PER WEEK IN DUNDEE TEXTILE MILLS, BY OCCUPATIONS, 1904.

Occupation.	Lowest wage.	Highest wage.	Median wage.	Predominant wage.	Number of observations.	Number receiving predominant wage.
Preparers.....	\$1.44	\$3.04	\$2.15	\$2.15	85	24
Shifters.....	1.76	2.33	2.03	2.01	26	4
Spinners.....	1.76	3.10	2.33	2.33	134	107
Winders (s).....	1.70	3.35	2.68	2.68	31	17
Weavers (s).....	1.22	3.65	2.92	2.92	46	110
				3.41		

* Pieceworkers.

b At each predominant wage.

The weekly wages of 206 male preparers were secured, showing a median wage of 10s. 4d. (\$2.51), and a predominant wage of the same amount; and 80 male shifters received a median wage of 9s. 5d. (\$2.29), while the predominant rates, paid to 16 in each case, were 9s. 5d. (\$2.29), and 10s. 3d. (\$2.49). The half timers whose wages were investigated numbered 150, and they received a median wage of 4s. (97 cents), and a predominant rate, paid to 35, of 3s. 7d. (87 cents). The median earnings of men power loom operatives were 19s. (\$4.62), while men working on carpet looms earned 12s. (\$2.92). In a Liverpool rope factory, with over 100 women employees, the average earnings of the women were as follows in the occupations stated: Preparers, 10s. (\$2.43); carders, 8s. 2½d. (\$2); opening knots, 6s. 10½d. (\$1.67); spinning green hemp, 9s. 7½d. (\$2.34); machine

spinning, 12s. (\$2.92); hand spinning, 13s. (\$3.16). In another factory of the same kind the per cent of women and girls employed earning under 6s. (\$1.46) was 39; those earning 6s. and under 8s. (\$1.46 and under \$1.95) was 19; those earning 8s. and under 10s. (\$1.95 and under \$2.43) was 11; those earning 10s. and under 12s. (\$2.43 and under \$2.92) was 11; and those earning 12s. and over (\$2.92 and over) was 20.

One of the most complete recent investigations of the wages of women has been made in Birmingham. From these tables the following are quoted:

RANGE OF WEEKLY WAGES AND AVERAGE WAGE OF GIRLS AND OF WOMEN IN BIRMINGHAM, BY OCCUPATIONS.

Occupation.	Range of wages.	Average wage of—	
		Girls under 18.	Women 18 and over.
Metal working:			
Cartridge-case makers.....	\$0.73	\$2.13	\$2.68
Bedstead lacquerers.....	\$0.97 to 4.62	1.30	2.89
Brass polishers.....	1.22 to 4.38	1.68	3.28
Brass-core makers.....	1.46 to 7.30	.....	4.25
Chandeller lathe hands.....	1.22 to 8.41	1.88	2.46
Cycle press hands.....	1.10 to 4.10	2.01	2.46
Electric-switch makers.....	.97 to 6.08	2.01	3.38
Pen press hands.....	.73 to 3.41	1.55	2.25
Pen grinders.....	.73 to 3.89	2.16	2.89
Screw machinists.....	1.46 to 4.82	1.88	2.81
Clothing:			
Corset machinists.....	.73 to 3.16	1.70	2.19
Trousers hands.....	.24 to 3.89	1.46	3.04
Coat hands.....	.37 to 4.38	1.64	3.61
Confectionery: Candy wrappers.....	.97 to 2.43	1.82	2.19
Jewelry:			
Gold polishers.....	1.22 to 4.87	1.46	3.68
Watch-jewel turners and polishers.....	.73 to 3.89	.....	2.82
Gold-chain makers.....	.49 to 4.87	1.64	3.58
Silver-chain makers.....	.61 to 4.87	.97	2.68
Paper and printing:			
Bindery sewers.....	.97 to 3.65	1.70	2.82
Bindery folders.....	.97 to 2.92	1.95	2.37
Press feeders.....	.85 to 2.68	1.42	2.33
Leather:			
Boot machinists.....	.24 to 3.41	1.95	2.74
Harness stitchers.....	.73 to 4.38	1.95	2.56
Glass: Polishers.....	.85 to 4.14	1.46	2.82
Laundry:			
Washers.....	2.92	.....	2.67
Ironers.....	.73 to 4.87	1.76	2.41
Sorters and packers.....	.85 to 2.43	1.64	2.19

The two most significant facts shown by the above table, and they are confirmed by the much more elaborate table covering several hundred occupations upon which it is based, are the low maximum average wage, of about \$4 a week, and the uniformity of average earnings in a great variety of trades requiring different grades of skill and responsibility. Whether a girl polishes glassware or watch jewels, her average wage is the same; but she earns a trifle more, possibly because the work is heavier or less genteel, if she polishes brass.

The London shop trades show the same tendency to a uniform wage. In clothing factories wages vary from 12s. to 20s. (\$2.92 to \$4.87) a week; embroiderers earn from 15s. to 18s. (\$3.65 to \$4.38)

weekly; jewel-case workers, 16s. (\$3.89); milliners, from 15s. to 25s. (\$3.65 to \$6.08); upholsterers (sewing), 15s. (\$3.65). There are exceptional instances of higher or lower earnings in all these trades, but the averages fall within the same limits. Women's wages in Great Britain, like their hour of arriving at their place of work, seem to be governed by custom, and though their level is rising from year to year they do not yet present the diversity characteristic of the pay of other workers.

INFLUENCE OF THE FACTORY ACTS UPON DISTRIBUTION OF EMPLOYMENT AMONG MEN, WOMEN, AND CHILDREN.

When the early factory laws of Great Britain went into force women workers opposed provisions in the factory acts limiting their hours of work for fear that such limitation would lead to the displacement of women by men. Women had been substituted for children in textile mills when the hours of the latter were first limited, and it was, perhaps, natural that the women should fear being in turn supplanted. But while the factory law has doubtless caused some redistribution of employment among workers of different age and sex it has not upon the whole lessened the demand for female labor.

It is true that there has been a decrease in the proportion of the female population working in industrial occupations since the factory acts first went into force, but there has been an increase precisely in those occupations where those acts might have been expected to have most influence. The following table gives the number of female employees in every thousand workers in several of the more important industries where the hours of labor have been restricted by factory legislation, by 10-year periods, from 1861 to 1901:

NUMBER OF FEMALES IN EVERY 1,000 EMPLOYEES, BY INDUSTRIES, 1861 TO 1901.

Industry.	1861.	1871.	1881.	1891.	1901.
Bookbinding	450	498	527	554	603
Boots and shoes	154	115	160	185	210
Cotton manufactures	567	598	620	609	628
Pottery and porcelain	311	354	354	385	392
Tailoring	208	254	330	427	471
Tobacco manufactures	221	296	435	548	601
Woolen and worsted manufactures	461	513	561	557	582

Meantime restrictive legislation, assisted by other favoring conditions, has lessened the employment of children. The per cent of the total number of children between the ages of 10 and 15 engaged

in gainful occupations in England and Wales was as follows for the corresponding 10-year periods:

PER CENT OF CHILDREN 10 AND UNDER 15 YEARS OF AGE ENGAGED IN GAINFUL OCCUPATIONS, BY SEX, 1861 TO 1901.

Sex.	Per cent engaged in gainful occupations in—				
	1861.	1871.	1881.	1891.	1901.
Males 10 and under 15 years of age.....	26.9	32.1	22.9	26.0	21.9
Females 10 and under 15 years of age.....	20.2	20.4	15.1	16.3	12.9

It appears that women still continue to take the children's places in the factories to some extent. The per cent of the total workers in the textile industries who were males of different ages and who were females is given in the following table:

PER CENT OF MALE AND OF FEMALE WORKERS IN THE TEXTILE INDUSTRIES, 1835, 1850, 1885, AND 1900.

Sex.	Percent in textile industries in—			
	1835.	1850.	1885.	1900.
Children under 13 years of age.....	13	6	9	5
Males 13 to 18 years of age.....	13	11	8	8
Males over 18 years of age.....	25	27	27	23
Females over 13 years of age.....	49	56	56	59

More recent figures show a continued decrease of child employment in the cotton trade.

NUMBER OF EMPLOYEES IN THE COTTON INDUSTRY, CLASSIFIED AS HALF TIMERS, YOUNG PERSONS, AND ADULTS, 1895 AND 1905.

Classification.	1895.	1905.
Half timers (under 13 or 14 years).....	55,625	31,744
Young persons (13 or 14 to 18 years).....	233,073	206,003
Adults.....	782,048	786,681
Total.....	1,075,751	1,026,378

Therefore, while the total number of employees in the cotton industry in 1905 was nearly 50,000 less than the number employed in 1895, the number of adults employed was greater by more than 4,000. It has been previously mentioned that there has recently been an increase in the number of half timers employed in the north England textile districts, due to the great activity of manufactures, which created an unusual demand for labor. Probably this movement has now ceased. Under normal conditions the factory law discourages even where it

permits the employment of children. Many employers will not engage half timers because it is too much trouble to take care of school certificates, pay fees for medical examinations, and comply with the other formalities required. In a less degree there is the same disadvantage in employing young persons. A factory owner whose employees are all over 18 years of age is relieved of the worst embarrassments of government supervision. Half timers do not fit in with the routine of many factories, because they serve but part of the working hours. The influence of the factory law in discouraging child employment has been reenforced by the growing complexity of industry, which places a greater premium upon mature and intelligent workers.

To return to the employment of women, it was remarked that the proportion of the female population working in industrial occupations has declined during the past century. The following table shows the proportion of the total population of males and females, respectively, above 10 years of age reported as occupied at each census period:

PER CENT OF MALES AND OF FEMALES OVER 10 YEARS OLD REPORTED AS OCCUPIED IN THE UNITED KINGDOM, 1881, 1891, AND 1901.

Sex.	1881.	1891.	1901.
Males.....	82.7	82.7	83.4
Females.....	33.5	34.0	31.6

The slight increase in 1891, which is also shown in the figures relating to the employment of children, is ascribed to peculiar industrial conditions of a temporary nature. The proportion of women employed in Ireland is less than in England; the proportion employed in England is the same as the average for the United Kingdom, and the proportion in Scotland is considerably higher than in either of the other countries, being 33 per cent. In Scotland, possibly because the children are kept in school longer, women take the place of young people more than elsewhere in industrial life, and they engage in occupations followed in England by men.

There is a prevalent opinion in England that the proportion of women is increasing in the industries. Commenting upon this, the chief lady statistician of the Board of Trade says that this is due to the entry into the labor market of middle-class women, who engage in new occupations, and to the substitution of skilled workers employed full time for a larger number of unskilled workers intermittently employed.

Some of the chief industrial occupations where female labor is decreasing are coal mining, furniture making, lace making, and the manufacture of gloves. In lace making and also in the manufacture of paper fewer women are employed than formerly, because they have been displaced by machinery. Rag-cutting machinery more particularly has thrown them out of paper mills. They have been displaced to some extent in printing offices by folding machines, which are operated by men. In laundry work also there are relatively fewer women than formerly, though they still constitute over 95 per cent of the employees, because the introduction of machinery has made work for men that previously did not exist in these establishments.

Previous investigators had shown that even if the proportion of the total female population employed remained the same, the proportion of occupied females in industrial pursuits was falling, while the proportion engaged in domestic service, teaching, and other vocations rose. The later investigation of the Board of Trade emphasized the decline in industrial pursuits, as refuting the idea that women were driving men out of the trades. The conclusion of this report was that the employment of married women was decreasing; that casual employment was decreasing, but that there was an increase in the number of young women under 25 with definite occupations and of middle-class women. However, the employment of women was not increasing relatively to that of men. There was "not a single case of absolute decrease in the number of males in any groups (of occupations) which did not show an absolute decrease in the number of females." The greatest advance in female employment was in the case of tailoring, where there was also an absolute increase in the number of men. In textiles men and boys were gaining at the expense of women, and in boot and shoe manufactures the reverse was occurring. It needs to be remembered that in these comparisons it is necessary to make a distinction between absolute and relative increases in the number of either sex employed. In some occupations, such as tailoring, a man cutter may prepare goods for anywhere from 10 to 50 female workers. An expansion of the trade or its concentration in larger factories might increase the proportion of female workers, though the absolute number of male cutters employed was larger than before.

The relative employment of the two sexes shows some interesting variations in different cotton-manufacturing districts. In large urban centers, such as Wigan, Manchester, and Salford, where the greatest proportion of cotton operatives are women and girls, the greatest proportion of women and girl workers are not cotton operatives. In

Blackburn, Burnley, Preston, and Oldham, where the proportion of women and girl workers who are cotton operatives is highest, the proportion of men and boys who are cotton operatives is also highest.

The factory acts have not displaced women, according to the best testimony, partly because other influences are segregating men and women into noncompeting occupations, as was mentioned in connection with wages. Two principal causes for this have been the division of labor and the introduction of machinery. The latter, however, has acted in two directions, displacing women where it made possible continuous processes, carried on by complicated mechanism with little labor, or where the machinery introduced was heavy and required skill to operate, and displacing men where it substituted a simple repetition process for more complicated manipulation. The substitution in paper making of a continuous mechanical process for separate semi-mechanical operations and the introduction of heavy machines for lace making illustrate the former influence. Similarly in the United States men have replaced women in some branches of knitting since the introduction of machinery for making full-fashioned hose. On the other hand, machinery has increased the number of women employed in watch manufacture. In Lancashire the proportion of women in this industry rose from 4.6 per cent to 13.78 per cent during the decade ending with 1901. An increase of women in the tailoring trades and in the boot and shoe trade has followed the more extensive use of sewing machines. In Birmingham, where women are largely employed at metal presses and light lathe work, the introduction of machinery has caused them to displace men in the following industries: Brass lathe burnishing, chain making, cycle saddle making, general cycle work, enameling saucepans, piano frames, etc., harness stitching, cheap jewelry, lens grinding, making corset fasteners, wood box making, wire mattress weaving, military ornaments, printing press feeding, tailoring, tin plate and other press stamping, whip making, umbrella and umbrella frame making, book making, and core making in brass foundries. Machinery has in some cases simply transferred women's work from the home to the factory. File cutting and nail making are among such industries. At Birmingham pen making alone employs about 7,000 women, or 90 per cent of the employees in this industry. Women are employed in place of men because (1) they become more dexterous in the purely mechanical work, (2) they are less impatient over its monotony, and (3) they are cheaper. In the manufacture of jewelry there is the following distribution of occupations between men and women: Men do large and small work, refining and assaying, modeling, casting and alternative processes, electroplating, spoon and fork making, enameling,

engraving, chasing, and embossing, jewel cutting and polishing, and gem setting, while women do burnishing, hand polishing, and jewelry polishing. Both men and women are employed at chain making and piercing. Lathe polishing is done by men in London and by women in Birmingham. It seems not unusual for women to enter a new branch of a trade somewhat earlier in the provinces than in the metropolis, possibly because outside of London they meet less resistance from old customs and long-established unions. The entry of women into chain making was favored by the substitution of machinery for hand processes. Piercing, which resembles fretwork, is done with a file upon fine work or with a saw upon large pieces. Saw piercing is now a woman's trade in Birmingham, though still done by men in London. Sometimes the transition from men to women is very rapid. In one cycle factory, in 1902, 80 men were employed at from 30s. to 40s. (\$7.30 to \$9.73) a week; in 1905 the men numbered but 20, women on the same machines doing the rest of the work at a wage in no case exceeding 18s. (\$4.38). "When the men were dismissed they were told to go home and send their wives back in their places." In a tin factory where in 1885 the proportion of men to women was as five to one it was in 1900 as one to two.

Even where machinery has not been introduced in an industry, a greater division of labor often makes openings for women. A generation or so ago the jewel cases of London were made by men, who constructed and finished the entire case, and earned up to 36s. (\$8.76) a week. Now men make the carved wooden boxes, but women cover and line them for a wage seldom exceeding 18s. (\$4.38) a week.

Trade unions have fought against the introduction of women in all industries where labor is organized and where women have become real competitors with men. This is notably true in the printing trades. In Edinburgh the introduction of women dates from a dispute between the employers and the compositors' union, in which girls were brought in as strike breakers. At several other places in Great Britain women compositors were introduced for the same purpose. As a result of a trade dispute, a Birmingham pot and kettle maker dismissed his union men in 1898 and replaced them with women. A dispute with union cigar makers as to the proportion of apprentices to be employed is said to have occasioned the first use of women in that occupation. They have practically replaced men as strippers and cigar makers in the outside cities, though men still control conditions in these trades in London.

After women have secured a foothold in a trade where there is sex competition, the proportion employed sometimes increases but slowly. For instance, from 1881 to 1901 the per cent of women and girls of

the total number employed in the industries just mentioned, in Liverpool, was as follows:

PER CENT OF FEMALES OF TOTAL EMPLOYEES IN BOOKBINDING, IN PRINTING, AND IN CIGAR MAKING, LIVERPOOL, 1881, 1891, AND 1901.

Industry.	1881.	1891.	1901.
Bookbinding.....	67.9	69.4	70.6
Printing and lithographing.....	8.3	5.6	9.7
Tobacco manufacturing.....	75.7	77.2	79.9

The proportion of women employed fluctuates in some industries, as indicated in the following table:

PER CENT OF FEMALES OF TOTAL EMPLOYEES IN THE MANUFACTURE OF EXPLOSIVES AND MATCHES AND OF SOAP, LIVERPOOL, 1881, 1891, AND 1901.

Industry.	1881.	1891.	1901.
Explosives and matches.....	79.1	89.4	75.9
Soap making.....	53.5	64.2	62.5

While the number of women engaged in industrial work is decreasing in proportion to the total number of women occupied and in proportion to the total population, it is possible—though the fact can not be verified by statistics—that the industrial product of women is not relatively declining. The total employment measured in days of work of woman labor even may have increased; for the number of women returned by the census as occupied in various industries is no index to the intensity and continuity of employment of each individual. A smaller number of women may be working more days than formerly. And all of our statistics, indicating increases of female labor in so many factory occupations and its extension into new fields, suggest that much industrial labor which even until recently was distributed among the homes is now becoming concentrated in larger manufacturing establishments. And this is a process which appears to have been, in its broad aspects, unhampered by the restriction of hours through factory legislation.

INFLUENCE OF THE FACTORY ACTS UPON THE GENERAL WELFARE OF WORKERS.

Apart from wages and hours of work, both of which fundamental conditions of workers' welfare have improved while the factory acts have been in force, and partly on account of them, some less direct and more general effects can be traced to these statutes. But this is a field that covers nearly all the ground for future reforms and extensions of this legislation, and the topic is one that in its larger inter-

pretation deals with the things left undone rather than with the things which have been done. Improved factory accommodation, better sanitation, separation of the sexes during labor, the guarding of dangerous machinery and processes, have all protected and perhaps bettered the health and morals of operatives. At least that has been the direct object of these regulations, and without them conditions would be vastly worse than they are at present. But supervision of life inside the factories has not after all reached the heart of the question. The home and family as affected by the factory afford a problem that can be only partly solved by legislation touching the factory alone.

Preliminary to considering this main question, there are some material and moral benefits to be traced directly to the factory laws. They have made the hours of work more regular, relieving workers of the tyranny of their own bad habits and of inefficient industrial administration, whereby formerly they experienced alternations of idleness and excessive labor injurious alike to their health and morals.

The requirement that a child shall have passed a certain educational standard, and that if a half timer he shall attend school the full five sessions every week, has helped to enforce compulsory education; and the necessity of physical certificates based upon an examination by a qualified surgeon in order to obtain employment has made parents more intelligently solicitous for the health of their children. Cases often occur where parents first learn of a child's latent disease or deformity when the child is examined for a physical certificate, and in some instances this leads to prompt and successful treatment.

The presence of factory inspectors in every district, and their periodical visits to factories, foster a sense of responsibility for the welfare of workers that makes many employers go beyond the requirements of the law. This affects the moral protection of women operatives as well as the comfort of their material surroundings. A woman worker can confide things to an inspector of her own sex that otherwise would never reach the ears of her employer, and such confidences are sometimes necessary in the interest of factory discipline and of the weightiest welfare of female operatives.

We now come to three of the most important questions relating to factory life—the employment of married women, infant mortality, and physical degeneration. All of these questions are interdependent. Legislation might directly influence only the first of them.

The industrial employment of women does not appear materially to affect their marriage rate. Statistics show the following per cent remaining single at different ages in England and Wales, in London and in East London separately, and in five of the textile cities where women are most largely employed in factories.

PER CENT OF SINGLE WOMEN AT DIFFERENT AGE PERIODS, BY LOCALITY.

Locality.	Age periods.			
	15 and under 20.	20 and under 25.	25 and under 35.	35 and under 45.
England and Wales.....	98	70	33	16
London.....	98	71	36	19
East London (a).....	97	57	21	9
Blackburn.....	99	70	38	16
Bolton.....	99	72	82	16
Burnley.....	97	64	27	14
Oldham.....	98	68	29	12
Preston.....	98	71	35	19

* In East London there is a low per cent of women employed in factories, but of the women who are employed there is a high per cent married.

These figures show only normal variations, or differences which it would be difficult to explain on the ground of industrial employment. They dispose equally of the claim sometimes made that the high earnings of girls in the cotton districts lead them to make early and improvident marriages; or that when a woman becomes self-supporting at an early age she is less disposed to marry. The large per cent of women married among the East London poor is the most significant fact in the table.

Possibly one reason why cotton factory girls do not avoid marriage is that it makes little change in their manner of living. A lady factory inspector reports:

At 13 years of age a majority of these women have begun to work in a factory, to handle their own money, to mix with a large number of people with all the excitement and gossip of factory life. They thus in most cases grow up entirely ignorant of everything pertaining to domesticity. After marriage, therefore, it is hardly probable that they will willingly relinquish this life to undertake work of which they are in so large a measure ignorant, and which is robbed of all that is to them pleasant and exciting.

Another lady expert, comparing conditions in south England with those in these textile cities, says:

The women of the north have not been inclined to regard industrial employment merely as a means of a livelihood for a short period preceding marriage; they have regarded it as their occupation in life far more than domestic management. In the south of England, where factory industries are of but small magnitude and the demand for domestic servants is much greater, the attitude of working girls is entirely different. As a rule they look forward to marriage as releasing them from industry.

Yet the proportion of married women occupied varies widely in different parts of the textile counties. In 1901 it was 37.9 per cent in Blackburn, or considerably more than the proportion of all women returned as occupied in the United Kingdom, and only 15.1 per cent

in Bolton, in the same vicinity. However, Blackburn is a weaving town and Bolton a spinning center, which explains this discrepancy, married women being more largely employed in the former occupation. The following table gives more general figures for the textile districts:

PER CENT OF WOMEN OVER 18 YEARS OF AGE WHO ARE EMPLOYED AND PER CENT OF THOSE EMPLOYED WHO ARE MARRIED OR WIDOWED, BY TEXTILE DISTRICTS.

Textile district.	Per cent of women employed—	
	Who are over 18 years of age.	Over 18 years of age who are married or widowed.
Lancashire and Cheshire cotton mills.....	67.2	32.9
Yorkshire woolen mills.....	83.0	29.8
Yorkshire mixed woolen and worsted mills.....	76.9	28.6
Yorkshire worsted mills.....	62.9	21.2

It is found that relatively fewer married or widowed women work in mills in small towns than in mills situated in large cities. In the Dundee flax and jute mills the proportion of female employees over 18 years of age who are married is estimated (upon a basis of replies obtained from 3,269 women workers) to be 25 per cent. The census figures for 1901 indicate a wide variation in the proportion of married and widowed women occupied in various parts of the country, the extremes in industrial cities ranging from about 12 per cent to 40 per cent. A different per cent, that of all the occupied women who are married and widowed, according to the last census, in the Lancashire cities having over 100,000 population, is given in the last column of the following table:

NUMBER OF FEMALES OVER 10 YEARS OF AGE, NUMBER AND PER CENT WHO ARE OCCUPIED, AND NUMBER AND PER CENT OF THOSE OCCUPIED WHO ARE MARRIED, BY LOCALITY.

Locality.	Total female population over 10 years of age.	Total occupied females over 10.	Women occupied who are married or widowed.	Per cent of total females over 10 who are occupied.	Per cent of total occupied females who are married or widowed.
Blackburn.....	55,363	31,445	10,708	56.8	34.1
Bolton.....	70,461	30,233	5,411	43.0	17.9
Liverpool.....	276,094	85,068	21,457	30.9	26.2
Manchester.....	219,630	86,975	22,764	39.6	26.2
Oldham.....	58,050	28,049	6,285	48.3	22.4
Preston.....	48,583	25,284	7,438	52.0	29.4
Salford.....	88,681	33,640	7,919	37.9	23.5
Total.....	815,862	320,734	81,982	39.3	25.6

These percentages, however, are subject to a very important qualification on account of the varying extent to which young girls are employed in different industries. They disguise the fact that in Blackburn nearly one-fifth of the total female population over 10 years of age consists of occupied married women, while in Salford less than one-eleventh falls into this category. These latter are the important proportions from the sociological point of view.

In Birmingham the percentages are somewhat lower, the married or widowed forming 23 per cent of the occupied females and 21 per cent of those engaged in factories. In London, 23.7 per cent of the occupied women are widowed or married. A private investigation in Liverpool, covering several thousand women workers, indicated that the per cent of the female employees who were married or widowed, in different industries, was as follows: Cotton, 51.6; shirt makers and seamstresses, 41.9; hemp and rope works, 38.4; tailoresses, 27.5; milliners and dressmakers, 17.3; oil, grease, soap, and resin works, 11.7; tobacco factories, 10.6; food workers, 9.6; paper boxes and bags and stationery, 9.3; bookbinders, 8.7; bleaching, printing, and dye works, 5.4; printing and lithographing offices, 4.3; explosives and match factories, 2.9. As a rule married women are found more largely in trades followed partly in the homes. But they have an important place in factory industries both in the textile districts and in Birmingham. These figures are considerably higher in some industries than the average for the United States, where, in 1900, but 21.2 per cent of the female cotton mill operatives were married, widowed, or divorced, 28.8 per cent of the seamstresses, 14.2 per cent of the shirt makers, and 19.7 per cent of the tailoresses. But in some of the trades employing a smaller number of women the per cent of married employees is higher than in England. The proportion of married employees varies in different factories in the same city and industry. In two of eight pen factories at Birmingham half the female employees were married; in four, more than one-third were married; and in the two remaining, about one-third were married.

One of the most important economic effects of the employment of married women is its influence upon men's wages. In factory trades married women are said to be most extensively employed where women's wages are highest. This is not alone because married women usually receive higher wages, for the average wage of girls under 18 years is highest where the proportion of married operatives is greatest. In summing up these facts, the statistician of the Board of Trade attributes them—"(1) To the higher wages obtainable by girls and by women in this part of the cotton district, and (2) to the lower wages earned by men in this part of the cotton district, both circum-

stances rendering women reluctant to give up work after marriage." Here, at least, we find the two conditions of high female and low male wages combined, whichever may be the cause of the other. In a recent sociological study of Westham, one of the big London workmen's suburbs, the investigators conclude: "There is a tendency for industries employing cheap women's and children's labor to arise in casual labor districts, and the casual laborer is often kept in a district by his family's occupation." The comment upon this condition is that "the women and children support the man, who degenerates into a loafer." In Dundee, where similar conditions obtain, investigators express the following opinion: "It is our impression that the married woman in Dundee is seldom continuously at work when the regular earnings of her husband are over £1 [\$4.87]. Several of the married women expressed the opinion that men should be paid at least £1 [\$4.87] a week, and wives would then have no need to work."

Among the most important social effects of the employment of married women is its influence upon housekeeping and diet, upon the care and control of children, and upon infant mortality. In many cases bad home conditions and the fact the wife is working may both alike be due to a third cause, which most frequently is a drunken husband. On the other hand, the drunken husband may be the product of the factory woman's ill-kept home. In Birmingham the homes of occupied women were found generally neater than was expected, though they did not compare favorably with those where the wife was not employed. But especially in the textile districts of north England the employment of wives in factories has led to lower standards of family comfort and to unwholesome diet. Factory surgeons, inspectors, and social workers in this part of England all comment upon the absence of wholesome and well-cooked food, for which less economical and less nutritious diet is substituted. Bread, sometimes butter or drippings, and boiled tea seem to be the staple fare. Children often have nothing but "bread and tap" (dry bread and hydrant water) for their luncheon. Sometimes the same fare is continued at night, while the parents have cold food with a pint of beer, strengthened with rum, at a public house. In Scotland kitchen economy is better understood. Here porridge supplements bread, and rice, potatoes, peas, and broth are more common on the tables.

Regularity of school attendance may be assumed as an index of the care of children. In Birmingham private investigation shows that from homes where the mother works only 27.8 per cent of the children attend school regularly, as compared with 50.5 per cent from homes where the mother is not employed. There are at hand no corresponding statistics from other places, but testimony supports the opinion that the condition is approximately the same elsewhere.

It is also the testimony that the employment of married women tends to diminish the birth rate, and it is reasonable to suppose that when the family income is dependent largely upon the work of the wife she will be indisposed to interrupt it by assuming the duties of a mother. One of the lady sanitary inspectors of Bradford writes: "I am sorry to say that motherhood interferes with wage-earning, and therefore any and every means are adopted to prevent this." The number of births per 1,000 women between the ages of 15 and 45, in Bradford and in England and Wales, was as follows during the 3-year periods indicated:

BIRTHS PER 1,000 WOMEN BETWEEN THE AGES OF 15 AND 45, IN CERTAIN 3-YEAR PERIODS AND IN 1906, BY LOCALITY.

Locality.	1880-1882.	1890-1892.	1900-1902.	1906.
Bradford.....	129.1	106.3	83.8	75.5
England and Wales.....	147.7	129.7	114.8	(a)

* Not reported.

The Dundee investigations suggest, though sufficient statistics were not obtained to confirm the point, that the employment of women in factories before childbirth may cause their children to be of light weight; and the deaths due to a number of causes attributable to the general condition of prematurity are probably larger than the average among the infants of this class of workers.

The relation of the factory employment of women to infant mortality seems well established, though there must be other important factors in the problem. In Bradford the mortality of children under 1 year is 160 per 1,000 among working mothers, as compared with 40.8 per 1,000 among those of mothers who are not working. The following table gives some suggestive figures pointing to similar results. "Infantile mortality" means number of deaths per 1,000 infants under 1 year of age.

INFANTILE MORTALITY, 1896 TO 1906, AND PER CENT OF OCCUPIED WOMEN 15 AND UNDER 35 YEARS OF AGE WHO ARE MARRIED OR WIDOWED, IN SPECIFIED LOCALITIES.

Locality.	Annual deaths per 1,000 infants under 1 year of age, 1896 to 1906.	Per cent of women 15 and under 35 years of age who are occupied.	
		Total.	Married or widowed.
England and Wales.....	133	(a)	(a)
Burnley.....	208	90.9	59.7
Preston.....	208	89.4	50.5
Blackburn.....	183	91.8	63.9
Oldham.....	170	87.3	33.4
Bolton.....	166	87.4	24.7

* Not reported.

Factory employment of women seems to be the only condition common to these textile towns that sufficiently distinguishes them from England and Wales as a whole to account for their relatively high infant mortality. But the fact that the infant mortality does not vary in direct ratio to the proportion of married women employed suggests other contributory causes. This suspicion is strengthened by the fact that the ratio of infant mortality has recently risen in Preston and Blackburn, though the employment of women in those cities is declining. But this may be due to poorer heredity and the persistence of household customs, the outgrowth of previous employment. The following table relating to 331 families in Dundee adds to the force of the one already given:

CHILDREN, LIVING AND DEAD, IN CERTAIN FAMILIES INVESTIGATED IN DUNDEE WHERE MOTHERS WORK BEFORE AND AFTER CHILDBIRTH COMPARED WITH FAMILIES WHERE MOTHERS DO NOT WORK.

	Number of mothers.	Number of children—			
		Born.	Living.	Dead.	Died first year.
Mothers working	240	885	365	520	462
Mothers not working	91	480	206	196	166

Where mothers worked a majority of the children are dead, where they did not work a majority are alive (all the mothers are from the working classes), and the respective mortality per 1,000 births, during the first year, is 522 and 365. Commenting on this condition the Dundee investigators say: "The obligation to support a family and also to bring it up is an unnatural condition of life, which leads to the usual consequences—broken-down mothers in early life and ill-nourished, rickety children, who develop into weedy, unhealthy men and women." Though Dundee has not so high an infant mortality rate as several towns in the English textile districts, it has the highest of the 15 principal towns of Scotland, averaging for the last decade 176, as compared with 149 in Glasgow, which is the largest city in the country and has the next highest rate. The death rate has fallen slightly in Scotland, as it has in England. The average rate in Preston for the 11 years ending with 1906 was 208, and the following year it was but 158. This was caused in part by an exceptionally favorable season, the death rate all over England being less than the normal. In Preston the rate fluctuated between 263, in 1897, and 150, in 1905, the variations being irregular from year to year.

The higher death rate of infants whose mothers are employed in industrial work may be ascribed broadly to two general causes, (1) prenatal conditions and (2) neglect after birth. Where mothers work unfavorable prenatal conditions are nearly constant from year

to year, but neglect after birth causes deaths to fluctuate accordingly as the season is more or less favorable for the survival of infants receiving improper care. In Dundee the deaths within a week of birth are very large, and those due to "immaturity" are more frequent than in cities where fewer mothers work. "It is impossible to apportion the cases of immaturity to definite causes, but it may be broadly stated that premature birth and other causes of death classified with it under the head of immaturity are due to congenital weakness in the infant, and this congenital weakness it is usual to attribute to prenatal causes." One of the leading English experts reports: "The effects of poverty and hard work while the child is being formed in the womb do undoubtedly have the effect of producing weakly children, who either grow up weakly or die."

The first phase of material neglect, after the child is born, forced upon the mother by the necessity of working in a factory, is the cessation of breast feeding. And the relative mortality of infants not fed at the breast appears to be higher in case of women engaged in industrial work, even in their homes, than in case of other mothers. The Research Committee of the Christian Social Union made an investigation of the causes of infant mortality among the London working classes. Factory women were not included within the scope of the inquiries. The following table shows the relative deaths per 1,000 infants, during the first year, classified according to the occupations of the mothers and to the manner of feeding:

NUMBER OF DEATHS PER 1,000 INFANTS DURING THE FIRST YEAR, BY CLASSIFIED OCCUPATION OF MOTHERS AND BY METHOD OF FEEDING.

Occupation of mother.	Breast fed.	Hand fed.	Mixed feeding.
Household duties only.....	118.8	220.3	113.7
Industrial work (outworkers).....	147.8	258.4	292.3
Charing or doing other janitor service.....	221.4	237.4	143.6

Taking the whole number of children in all three classes who died in infancy, the death rate of breast-fed children is 145.1 per thousand, as against 230.4 per thousand of hand-fed children. Factory work, often resumed by the mothers even before the legal period of 4 weeks has expired, makes breast feeding impossible, and this accounts for the wide fluctuations from year to year in the infant mortality of such factory towns as Preston. In a favorable season, when milk can be kept cool and there are no sudden changes or extremes of temperature, the mortality from gastric diseases, the consequence mostly of artificial feeding, suddenly declines, only to rise again the next unfavorable summer.

The ignorant and careless feeding of the factory workers' children is a principal cause of their higher mortality as compared with hand-fed infants in middle-class homes. The National League for Physical Education and Improvement, of London, issues a circular to working mothers, entitled "How to bring up a baby." Among the rules are: Never force food down a child's throat, nor feed it when it retches. Never give a baby teething powders, soothing syrups, tea, coffee, beer, wine, spirits, herrings or bloaters, new bread, pastry, cheese, nuts, or unripe fruits.

A subcommittee appointed to inquire into the high rate of infant mortality at Preston, where, in spite of the temporary improvement recently shown, the average rate by 5-year periods has risen, since 1885, from 208 to 236, reported:

(1) First among these causes is the employment of female labor in mills. (2) The return of the mother to her work within a short period after her confinement, necessitating the nursing out of infants, with its attendant evils of artificial feeding, and violent and sudden changes of temperature during their removal night and morning through the cold air of the streets. (3) Ignorance of household duties of the ordinary factory girl, resulting in the house air being continually foul and poisonous, and the baby being woefully neglected as regards cleanliness, and fed upon unwholesome and utterly wrong food.

A typical Lancashire mother thus describes the diet of a 3-months old baby: "It 'ad some sausages this morning; it does like sausages." "Do you ever give it 'chips' (i. e., Saratoga chips)?" "Oh, ay, it's a bobby for chips, especially wi' vinegar—it'll ait owt, will that child!" No milk was taken at this house. These ill-fed children, if they survive, grow up with appetites jaded by improper feeding, not by overfeeding and the natural consequence is a craving for stimulants. A physician with long experience as a certifying surgeon in the factory districts, now retired and engaged in social philanthropic work, described how he visited a department some friends had established for feeding at noontime some of the poorer or more neglected school children of a factory suburb. Curious to test the quality of the food that was given, he tasted the soup, but was obliged to reject the mouthful he had taken because it burned with pepper. But the children were enjoying it, and when he brought the matter to the attention of the cook, the latter informed him that the little ones were incapable of relishing any but such most highly seasoned dishes. From pepper to spirits is but a step in the gastronomic economy of the factory worker's household. Lighter stimulants, such as tea, so extensively used by factory women, are taken to satisfy the natural craving for something warm where the diet is composed so largely of cold or improperly prepared food. And all these things trace

back, in a direct and luminously distinct line, to the employment of prospective wives and of mothers in the factories.

Yet even the most enthusiastic social reformers do not call for amendments to the law to prevent women—or even to prevent mothers—from working in factories. This employment is recognized as an economic necessity for the working people at present. It is a condition that it would be far better for a country never to reach—even at the expense of less wealth and so-called industrial progress—but once incurred it can not be remedied abruptly. However, amendments forbidding the employment of mothers immediately before and for two or three months after childbirth, combined if necessary with temporary pensions to working mothers, to carry them over this critical period, are advocated by men who would not be called extremists. Meanwhile the municipal authorities, through their lady health visitors and private associations, are doing something to meet the worst evils arising from these causes. The Dundee Social Union is making efforts in three directions:

(1) To encourage the breast feeding of infants; (2) to discourage married women's work; and (3) to provide a center for educational work among women.

(1) Breast feeding is encouraged by the provision of good, nourishing dinners, consisting of soup, meat, potatoes, milk pudding, and bread, at a cost of 2d. [4 cents] each (or free in necessitous cases) for mothers who are nursing their own babies and who are unable to provide a proper meal for themselves. (2) To discourage married women's work a maternity club provides 1s. 6d. to 3s. [37 to 73 cents] weekly for three months—varying according to the mother's previous payments—to mothers who stay from work to nurse their babies. During this time the mothers receive also free dinners. (3) The educative work is at present limited to the weekly weighing of the infants, with advice as to feeding and management, and simple, practical lectures by a qualified nurse, with long experience, on how to feed and clothe the baby. This part of the work, combined with the home visiting of birth cases by two lady health visitors specially appointed for this duty, has been found of great value, but the hope is that at no distant date a complete "school for mothers" may be developed. Any mother may bring her baby to be weighed, and during last year 293 availed themselves of the privilege. The results in the lessening of the rate of infant mortality are most encouraging. Among the 130 entered on the books for the year preceding August, 1907, the death rate was only 6 per cent as compared with 20 per cent for the district. Eighty-four per cent of these mothers fed their babies from the breast until they returned to work.

INFLUENCE OF THE FACTORY ACTS UPON INDUSTRY.

The industrial progress of Great Britain during the past century has been too marked to have been retarded materially by legislation. In some cases it was found advisable, after an amendment of general application had been made to the factory law, to except from this

provision a particular industry; or else such exceptions have been made when the amendment was first enacted. For instance, the regulations as to hours of work for women and young persons have been modified in case of fruit canneries, fish-curing establishments, and other places where perishable products are handled. Wherever the factory act has seriously hampered an industry as a whole, it has been changed, so far as possible without sacrificing the obvious welfare of the workers, to consult the needs of that industry. Consequently there are few, if any, instances where an entire branch of manufacture has been checked by legislation for the protection of employees. Neither can the progress of any industry, unless by somewhat fanciful speculation, be traced to the influence of the factory laws. But these laws do appear to have at least three positive effects, due to their changing the competitive relation of the different manufacturers within single industries.

Most regulative acts, when they are fairly enforced, are more burdensome to the small manufacturer than to the large one. Other things being equal, in most industries large factories are more economical than small ones, and the latter even up competition by working longer hours, sometimes at lower wages. We have the extreme of this relation in the sweat shop as compared with the large factory. The influence of the factory acts, not immediate and revolutionary but gradual and progressive, seems to have been in three directions—to force work out of the smaller and ill-equipped factories into the large ones; to force it out of small factories into unregulated home industries; or to compel the introduction of labor-saving machinery. As the last influence is primary, it may be first considered. When the hours of work of children in ropewalks and in factories for manufacturing twist tobacco were limited, power twisting and winding machinery was substituted for child labor in turning the wheels. In match factories the substitution of automatic machinery in the processes preliminary to dipping are traced directly to restrictions on the hours of children. In small printing offices folding machines have been introduced since the overtime of female workers was limited by law, and in a Liverpool tin factory a soldering machine was introduced for the same reason.

The rules regulating dangerous trades are found in practice to bear more heavily upon small shops, where employees often work under unwholesome conditions. The cost of complying with sanitary requirements, installing ventilating plants, and making obligatory changes in apparatus, constitutes a much larger fraction of the entire capital employed by a small shop master than by a modern factory, which is usually in a building erected expressly for manufacturing purposes, and has an up-to-date equipment. The cost of the attending physician falls relatively heavier on the small employer.

So, cases have been noted where small works, such as match factories, have closed rather than comply with the requirements of the law.

Where the work is of such a character that it can be carried on in the home, the factory owner with small capital naturally seeks to extend his business first in this direction, partly to evade the regulations as to hours of work and overtime of women and children, and partly because his resources do not enable him to provide factory accommodations conforming to the statutory requirements.

An American needs to bear in mind, in considering the influence of factory laws upon British industry and the reaction of industrial conditions upon those laws, that working conditions are not sheltered by a protective tariff and that the manufacturer has always been able to appeal to the dangers of unrestricted foreign competition in opposing an extension of the act. Due regard has been had to the limitations to industrial regulation that this situation theoretically imposes, and partly for this reason Parliament has taken extreme care in these laws to consult the interests of employers as well as of workers.

The most vigorous opposition to the factory acts and their various amendments has been centered on the limitations to the employment of women and children. Though this opposition is no longer so active as formerly—and among better employers and those representing the largest employing interests has ceased entirely—the arguments used by its exponents are still of interest because they contain so many falsified predictions. Most of these predictions related to the effects of the proposed laws upon industry, which it was supposed would be ruined by official regulation. These prophecies proved untrue, partly, perhaps, because they were fundamentally wrong in their first assumptions, but chiefly because they regarded industry as static. The prophets failed to foresee the constant change in the methods, processes, and operations of manufacture and the organization of business that made predictions based on existing conditions out of date almost as soon as uttered. Factory legislation may modify the channels through which industry flows, but can hardly check, even momentarily, its course.

CONCLUSION.

The examination of the condition of woman and child wage-earners in Great Britain, and more especially the relation of the State to this class of workers, which is here concluded, has of necessity been cursory and fragmentary. Largely it is based upon documentary and other printed material, interpreted in the light of personal observation and corrected by interviews upon the ground. Credit has not been given to the various authors quoted, because much is

taken from fugitive (though not for that reason less valuable or authoritative) reports, from various municipal and local publications, and from the rich social periodical literature which does so much credit to British humanitarian movements. Two works, *Women Workers in Liverpool* and in *Birmingham*, have been used almost exclusively for information relating to female employment in those two cities. They do not touch upon the condition of children, except indirectly. The report of the Dundee Social Union, published in 1905, is particularly valuable as a local study of conditions of factory employment affecting the homes, and of the social condition of workers in general. The publications of the Women's Industrial Council of London, of the Royal Society of Arts, of the British Institute of Social Service, of the Women's Trade Union League, of the Anti-Sweating League, of the Committee on Wage-Earning Children, of the Industrial Law Committee, of the British Association for Labor Legislation, of the Research Committee of the Christian Social Union, and of other local or general societies all contain material supplementing the government reports, and covering fields not yet made the subject of official investigation.

One movement, tending perhaps to influence the condition of women workers more than that of men, deserves more than the passing mention that can be here given it. That is the increasing effort, fostered both by private societies and by public means, to provide for the apprenticing of young people or for their industrial training by other agencies. Girls are now apprenticed, though usually without indentures, in several trades, such as cigar making, embroidery, dressmaking, polishing, to some extent in printing, and in some clothing factories. An association is investigating the opening for girls in different branches of skilled work, cooperating with the educational authorities to secure training facilities in the technical departments in those occupations that promise the most opportunities, and educating the girls themselves both in the desirability of training for a particular line of employment and in the fields of industrial work most likely to afford them a livelihood. Similar work is being done in the case of boys, and in some cities the educational authorities, or societies cooperating with them, do not drop the boy as soon as he has left his studies, but follow him up during the first years of after life and direct and counsel him toward skilled trades and a definite career. In a word, it is recognized by practical measures that one of the first ways to improve the condition of wage-earners from the weaker industrial classes is to increase their efficiency.

Many of the conditions surrounding woman and child workers in Great Britain are very bad. They are here described and accounted for entirely on the basis of British evidence. The whole

complex of conditions in which the lives of these workers are passed seems to casual observation worse than that of similar workers in most parts of America. But the darkest spots in America are in many ways quite as dark as any of those in the older country. And the value of a study of British conditions lies in the more vivid appreciation it gives us of the ultimate evil tendencies of even regulated industrialism upon workers. Broader and more generous remedies must be discovered for these evils before it is too late. Such remedies are being experimented with in England. Present conditions in that country are an improvement upon those of the past; but it is coming to be understood that the influence of the law must exceed the bounds of the factory. Reforms must extend into the homes of workers, governing the intimate affairs of domestic life, and they can be accomplished only by gradually introducing higher efficiency, higher earnings, and a more intelligent distribution of home expenditures. Fundamentally, therefore, the problem has two aspects—economic and educational. The importance of both aspects is recognized, and the method of education is understood. Economic readjustment to make possible higher earnings is a yet untried field of legislation. England seems disposed to enter it experimentally, however, by establishing wage boards.

MINIMUM WAGE ACT, 1908, NEW SOUTH WALES.

AN ACT to provide a minimum wage for certain persons; to make better provision in certain cases for the payment of overtime and tea money; to amend the Factories and Shops Act, 1896; and for purposes consequent thereon and incidental thereto. [Assented to, 24th December, 1908.]

*Be it enacted by * * * Parliament assembled, and by the authority of the same, as follows:*

PRELIMINARY.

1. This act shall commence on the first day of January, one thousand nine hundred and nine, and may be cited as the "Minimum Wage Act, 1908."

2. In this act,—

"Early-closing acts" means the Early-closing Act, 1899, the Early-closing (Amendment) Act, 1900, and the Early-closing (Hairdressers'-shops) Act, 1906.

"Employer" means—

(a) Any person for whom a workman or shop assistant works, and includes any agent, manager, foreman, or other person acting, or apparently acting, in the control of any workman or shop assistant;

(b) Any person, company, or association employing persons in a factory, warehouse, or shop, or occupying any office, building, or place used as a factory, warehouse, or shop, and includes any agent, manager, foreman, or other person acting, or apparently acting, in the general management or control of a factory, warehouse, or shop.

"Factory" means factory as defined in the Factories and Shops Act, 1896.

"Shop assistant" and "shop" mean respectively shop assistant and shop as defined by the early-closing acts.

"Workman" means—

(a) Any person employed at any handicraft, or in preparing or manufacturing any article for trade or sale, and includes any person employed in a bake-house, or laundry, or in dye works, but does not include any inmate of an institution of a charitable nature;

(b) Any person who is employed in a factory or who works in a factory at any kind of work whatever.

3. (1) A workman works overtime within the meaning of this act when he works more than forty-eight hours in any week or after six o'clock in the evening on any working day.

(2) A shop assistant works overtime within the meaning of this act when he works more than one half-hour after the closing time of the shop in terms of the early-closing acts.

MINIMUM WAGE.

4. No workman or shop assistant shall be employed unless in the receipt of a weekly wage of at least four shillings [97 cents], irrespective of any amount earned as overtime.

Whosoever employs any such person in contravention of this section shall be liable to a penalty not exceeding two pounds [\$9.73].

5. Whosoever, either directly or indirectly, or by any pretence or device, requires or permits any person to pay or give, or receives from any person any consideration, premium, or bonus for the engaging or employing by him of any female in preparing, working at, dealing with, or manufacturing articles of clothing or wearing apparel for trade or sale shall be liable on conviction to a penalty not exceeding ten pounds [\$48.67]; and the person who has paid or given such consideration, premium, or bonus may recover the same in any court of competent jurisdiction from the person who received the same.

OVERTIME AND TEA MONEY.

6. (1) Where a workman or shop assistant, being a male under sixteen years of age or a female, works overtime, his employer shall, unless exempted under this section, pay such workmen or shop assistant not less than three pence [6 cents] for every hour or portion of an hour of the overtime worked.

Such overtime shall be paid for at intervals of not more than one month.

(2) **Provided that where it is proved to the satisfaction of the minister that, by reason of the customs or exigencies of any trade or employment, or for other reason, it is desirable to exempt such trade or employment with regard to males under sixteen years of age, either generally or in any particular locality, from the operation of this section, he may grant such exemption for such time as he thinks fit.**

(3) **Provided also that payment for overtime may be claimed either under this section or under section thirty-seven of the Factories and Shops Act, 1896.**

(4) If any employer fails to carry out the provisions of this section he shall be liable to a penalty not exceeding two pounds [\$9.73].

7. Section thirty-seven of the Factories and Shops Act, 1896, is amended by inserting after the words "at the rate of time and a half" the following words: "Such payment shall be made at intervals of not more than one month."

8. Where any workman or shop assistant, being a male under sixteen years of age or a female, is required by his employer to work overtime on any day, the employer shall on such day pay such workman or shop assistant a sum of not less than sixpence [12 cents] as tea money, and if he fails to carry out the provisions of this section he shall be liable to a penalty not exceeding two pounds [\$9.73].

SUPPLEMENTAL.

9. (1) Every employer shall—

(a) Keep a record, in the form prescribed, of overtime worked by such of his workmen or shop assistants as are males under sixteen years of age or females;

(b) Produce such record and furnish extracts therefrom to an inspector appointed as hereinafter provided when called upon to do so.

(2) If any employer fails to carry out any of the provisions of this section, he shall be liable to a penalty not exceeding ten pounds [\$48.67].

10. (1) An inspector appointed under the Factories and Shops Act, 1896, may, in addition to the powers thereby conferred on him,—

(a) At any reasonable hour, by day or night, enter any building, room, or place where he has reasonable cause to believe a workman or shop assistant is employed;

(b) Examine any workman or shop assistant, either alone or in the presence of any other person, with respect to any matter dealt with in this act, and require him to sign a declaration of the truth of the matters in respect of which he is so examined;

(c) Require the production of and examine and take extracts from any record required by this act to be kept.

(2) Any person who obstructs any such inspector in the exercise of his powers under this section, or who by word or act, or by concealing any person, prevents the examination as aforesaid of any workman or shop assistant, shall be liable to a penalty not exceeding twenty pounds [\$97.33].

11. The governor may at any time after the passing of this act make regulations for carrying out its provisions and prescribing the forms to be used in its administration, and may in such regulations impose any penalty not exceeding ten pounds [\$48.67] for any breach of the same.

A copy of such regulations shall be laid before both Houses of Parliament without delay.

12. Contraventions or breaches of this act, or of the regulations made thereunder, shall be reported to the minister by inspectors, and no proceedings in respect thereof shall be instituted without the authority of the minister.

13. The penalty for any such contravention or breach may be recovered before a stipendiary or police magistrate, or any two justices of the peace in petty sessions: Provided that proceedings for recovering any such penalty must be commenced within three months after such contravention or breach.

SAVINGS.

14. This act shall not apply where all the persons employed as workmen and shop assistants are members of the employer's family, related in the first or second degree by blood or first degree by marriage to the employer.

RECENT REPORTS OF STATE BUREAUS OF LABOR STATISTICS.

ILLINOIS.

Fourteenth Biennial Report of the Bureau of Labor Statistics of the State of Illinois. 1906. David Ross, Secretary of Board of Commissioners of Labor. x, 358 pp.

This report consists of two parts, as follows: Part I, **Manufactures of Illinois**, 167 pages; Part II, **Statistics of women working in factories**, 190 pages.

MANUFACTURES.—This part presents a continuation of the statistics of manufactures in Illinois for the year 1904, collected by the United States Bureau of the Census and received too late for publication in the Thirteenth Biennial Report of the Illinois Bureau of Labor Statistics. Tables are given showing statistics for the 31 cities having a population of 8,000 and over and for the leading industries of the State.

WORKING WOMEN IN FACTORIES.—This investigation was conducted in the cities of Chicago, Elgin, Bloomington, and Springfield during the year 1906. Data obtained from the pay rolls of 86 establishments were amended and corroborated by schedules secured from 2,545 individual employees engaged in 460 occupations and in 37 industries. Of these employees 451 were engaged in the meat packing industry, 228 in the manufacture of watches, 217 in the manufacture of paper boxes, 199 in the manufacture of shoes, 174 in laundries, and 170 in the manufacture of binding twine.

The average earnings reported by 2,258 employees for one current week was \$7.49. Of these employees 5.3 per cent earned less than \$4 per week, 40.7 per cent earned from \$4 to \$7 per week, 37.3 per cent earned from \$7 to \$10 per week, and 16.7 per cent earned \$10 and over per week. Of the total employees 1,303 or 57.7 per cent reported working a full year of from 50 to 52 weeks. These reported average earnings for the year of \$356. Tables are also given showing the conditions of the homes, the amount paid for board, time of leaving home for work, car fare, health, previous occupations, age at beginning work, present age, years attending school, etc., together with tables showing in detail for 37 industries statistics of employment and of wages and earnings of working women.

MARYLAND.

Sixteenth Annual Report of the Bureau of Statistics and Information of Maryland, 1907. Charles J. Fox, Chief. 204 pp.

The following are the subjects presented in this report: The child-labor law and its enforcement, 58 pages; inspection of clothing and other manufactures, 15 pages; free employment agency, 12 pages; census of buildings in Baltimore city, 21 pages; agricultural statistics, 14 pages; cost of living, 9 pages; in labor circles, 9 pages; strikes and lockouts, 15 pages; new incorporations, 22 pages; immigration, 3 pages; conferences, 1 page; financial statement of the bureau, 1 page.

THE CHILD-LABOR LAW AND ITS ENFORCEMENT.—The work of enforcing what is generally known as the child-labor law was placed upon the labor bureau by the state legislature in 1906. In this chapter is given the results of the work under this law during 1907. To children between 12 and 16 years of age 9,634 labor permits were issued—5,953 to boys and 3,681 to girls. Of this total 342 labor permits were issued to colored boys and 71 to colored girls. In Baltimore city the labor permits issued numbered 8,206—5,026 to boys and 3,180 to girls, of which 306 were to colored boys and 60 to colored girls. Applications for permits to the number of 1,550 were refused. The arrests made during 1907 for the violation of the law numbered 42.

A summary of the work of the various district inspectors shows that there were employed in the manufacturing establishments and factories of various kinds inspected in Baltimore city 2,188 males and 1,781 females under 16 years of age. In wholesale and retail stores and in offices there were employed 1,313 males and 458 females under 16 years of age. The average wages for the whole city for children engaged in the manufacturing industries was \$3.79 per week, and for children employed in stores, offices, etc., \$3.32 per week. Also there is given the degree of intelligence of the children, hours of labor per day, sanitary condition of surroundings, etc.

The chapter, further, contains a report on the applications for relief investigated by the Charity Organization Society, the need of relief being based upon the alleged loss of wages of children to whom labor permits had been refused. There were 53 cases referred to the secretary of the society, and reports were received in regard to 44 of the cases so referred.

INSPECTION OF CLOTHING AND OTHER MANUFACTURES.—During the year 1907 the work of inspecting establishments where clothing and other articles are made which come under the act commonly known

as the "sweat-shop law" was actively pursued and with satisfactory results. The old-time sweat shop has in large measure been eliminated from the manufacture of clothing in the city of Baltimore.

After inspection and report thereon, during the year 1907 there were 916 permits issued to proprietors to work and employ 18,690 people in the manufacture, chiefly, of various articles pertaining to the clothing trade. Of the total permits 527 were issued to proprietors of factories and workshops and 389 to proprietors who worked in tenements and dwellings. The number of people who were authorized to be employed in the factories and workshops aggregated 17,819 and in the tenements and dwellings 871. Of children under 16 years of age there were employed 129 males and 393 females; of those under 14 years of age there were employed 28 males and 57 females. Tables, by inspection districts, give in detail number of employees by age and sex, kind of articles made, and conditions, sanitary, social, etc., existing in connection with each tenement, dwelling, and factory inspected.

FREE EMPLOYMENT AGENCY.—During 1907, the year covered by this report, there were 188 applications for positions—161 by males and 27 by females. Of the applicants, 36 were laborers, 25 were clerks, 14 were farm hands, and the remainder were distributed among 56 other occupations. Applications for help numbered 61—for male help 40 and for female help 21. There were 66 positions filled—42 by males and 24 by females. As to character of positions filled, 26 were clothing workers, 11 were farm hands, 11 were laborers, and the remainder secured positions in 5 other lines of employment.

COST OF LIVING.—Under this title comparative prices of various articles of food and fuel in the Baltimore markets are presented for the years 1892, 1895, 1905, 1906, and 1907. A table is also given showing the average monthly retail prices of the principal articles of food for eleven months (February to December) of 1907, compiled from prices quoted in the daily papers of Baltimore. In conjunction with the prices of food commodities, etc., there are presented for 502 persons engaged in 37 different occupations in 1907 hours worked and earnings per day, days worked during the year, and average yearly earnings. For persons engaged in a part of the occupations the average yearly earnings for 1907 are placed in comparison with those for 1906, 1905, and 1904.

IN LABOR CIRCLES.—Under this caption is presented the returns for 1907 from 56 labor organizations, having a reported membership of 7,221. A list of the unions reporting is given, with name of each organization, name and address of secretary, membership, hours of labor per day, and minimum rate of wages per week. For the skilled trades, the lowest reported union wage per week was \$7 for bindery

women, while the highest was \$30 for plasterers. Of the total unions, 24 reported the hours of labor as 8 per day, 17 as 9 per day, 4 as 10 per day, while the remainder reported the hours as from 7 to 12 per day.

STRIKES AND LOCKOUTS.—There are given for the year 1907 statistics of 11 strikes, which threw out of employment 1,025 persons (1,024 males and 1 female), with an estimated wage loss of \$91,537. Of the 11 strikes, 8 were ordered by organizations and 3 were not; 6 were for increase of wages, 1 was against reduction of wages, and 4 were for other causes; 1 strike was successful, 2 were partly successful, and 8 were unsuccessful. So far as could be ascertained, there was \$5,500 given in assistance to those on strike. Of each strike a brief account is given. No lockouts were reported for the year.

NEW HAMPSHIRE.

Seventh Biennial Report of the Bureau of Labor of the State of New Hampshire, 1907-8. L. H. Carroll, Commissioner. 199 pp.

The following subjects are presented in this report: Leading industries, 5 pages; statistics of manufactures, 72 pages; unoccupied manufacturing plants and water-power privileges, 19 pages; manual training, 10 pages; strikes, 2 pages; labor laws, 29 pages, labor organizations, 38 pages.

LEADING INDUSTRIES.—The manufacture of cotton goods is the most important industry in the State. In the 21 establishments reported as manufacturing cotton cloth in 1907 employment was given to 12,167 males, to whom was paid \$5,756,157 in wages; 12,901 females, to whom was paid \$4,145,321 in wages; 330 children under 16 years of age, to whom \$72,242 was paid in wages, and 245 salaried clerks, whose salaries amounted to \$406,440. Invested capital amounted to \$25,960,703, and goods to the amount of \$38,254,160 were produced. Like statistics are given for each of the other 12 leading industries.

STATISTICS OF MANUFACTURES.—For the year 1907 reports were received from 1,762 establishments engaged in 49 specified industries and 62 establishments engaged in other industries, not specified. Tables are presented showing by industries and by location the capital invested, employees by classes, wages and salaries paid, and value of products. The following summary statement shows aggregate figures for the State:

Establishments reporting	1, 824
Capital invested	\$119, 653, 209
Value of product	\$164, 603, 442

Average number of wage-earners:

Males -----	62, 568
Females -----	24, 694
Children under 16 years of age-----	986

Total -----	88, 248
-------------	---------

Wages paid:

Males -----	\$30, 048, 077
Females -----	8, 305, 996
Children under 16 years of age-----	189, 113

Total -----	38, 543, 186
-------------	--------------

Salaried employees -----	2, 180
Salaries paid-----	\$2, 481, 404

UNOCCUPIED MANUFACTURING PLANTS AND WATER-POWER PRIVILEGES.—This is a list of the manufacturing plants in the State unoccupied, as well as of water-power privileges, developed and undeveloped, with a statement of the dimensions and condition of the plants, industry for which each was originally intended, and location.

MANUAL TRAINING.—Under this head several papers by principals of schools and other educators are given, discussing the practical value of manual training in the public schools.

STRIKES.—Brief mention is made of one strike occurring in 1908, which was unsettled at the time of making the report.

LABOR LAWS.—This section reproduces the various laws of the State affecting labor.

LABOR ORGANIZATIONS.—This is a list of the labor organizations in the State, with date of organization, membership, names of officers, and dates of meetings of each.

NORTH CAROLINA.

Twenty-first Annual Report of the Bureau of Labor and Printing of the State of North Carolina for the year 1907. H. B. Varner, Commissioner. 344 pp.

This report consists of seven chapters, as follows: Condition of farmers, 80 pages; Condition of the trades, 21 pages; Miscellaneous factories, 87 pages; Cotton, woolen, and knitting mills, 62 pages; Furniture factories, 16 pages; Newspapers of the State, 46 pages; Railroad employees, 15 pages.

CONDITION OF FARMERS.—The report on this subject is compiled from returns made by representative farmers residing in different sections of the State. The data is presented, by counties, in five tables, which show condition of land and labor, wages, cost of living, etc., cost of production of principal crops, market price of

crops, and profit on production. In all (98) counties labor was reported scarce; 96 counties reported that Negro labor was unreliable, 1 that it was reliable, and 1 that there was no Negro labor; 52 counties favored immigration, 46 opposed it; cost of living was reported as having increased in 97 counties, and in 1 as not having increased. The highest and lowest monthly wages paid for farm laborers in each county were reported, and for men the average of the highest wages so reported was \$25.03, and of the lowest \$15.32; for women like averages were \$15.47 and \$10.23, and the average wages of children were \$9.39. For all classes of farm labor an increase of wages was reported from 92 counties, 6 reporting no increase.

CONDITION OF THE TRADES.—The data from which the tables presented under this title were compiled were secured from representative men engaged in the various trades considered. These reports from the wage-earners of the State show daily wages and wage changes, working conditions and cost of living, hours of labor, conditions of apprenticeship, etc. Of the wage-earners making returns, 63 per cent reported an increase of wages and 37 per cent no change; 54 per cent made full time and 41 per cent part time; 88 per cent reported cost of living increased and 12 per cent no change; 40 per cent favored an 8-hour day, 10 per cent a 9-hour day, and 45 per cent a 10-hour day; 88 per cent favored fixing a day's work by law and 7 per cent opposed it. The average wages paid per day in the different trades were: Blacksmiths \$2, brick masons \$2.50, carpenters \$2.01, harness makers \$1.25, machinists \$3.20, miners \$1.75, painters \$2.44, plasterers \$4.50, printers \$2.43, textile workers \$1.27, and wheelwrights \$1.93.

MISCELLANEOUS FACTORIES.—Under this classification the number of factories reporting was 587, of which 523 reported an invested capital of \$42,085,790; 568 reported the number of employees as 30,991, and 579 reported the number of persons dependent on them for a livelihood as 92,081. An 8-hour day was reported by 6 factories, a 9-hour day by 7, a 9½-hour day by 4, a 10-hour day by 436, a 10½-hour day by 5, an 11-hour day by 48, a 12-hour day by 69, and a day ranging from 10 to 12 hours in length by 4. An increase in wages was reported by 74 per cent of the factories, no change by 17 per cent, while 9 per cent made no report. Of the adult employees 84 per cent were able to read and write and of the children 87 per cent. The highest daily wages paid was \$2.47 and the lowest \$0.93. In 69 per cent of the factories wages were paid weekly, in 17 per cent semimonthly, in 11 per cent monthly, in 1 per cent daily, and in 2 per cent by the piece. The tables presented show for each establishment the product manufactured, capital stock, horsepower, days in operation, hours of labor,

number of employees, and number of persons dependent on factory, highest and lowest wages, etc.

COTTON, WOOLEN, AND KNITTING MILLS.—The number of mills covered by this presentation is 329, with an aggregate invested capital of \$45,807,535. The number of spindles in operation was 2,768,576, of looms 52,272, of knitting machines 5,161, together requiring 114,790 horsepower.

The number of employees reported by 97 per cent of 284 mills (281 cotton and woollen and 3 silk) was 25,353 adult males, 20,221 adult females, and 6,604 children, a total of 52,178. The number of persons dependent upon 83 per cent of these mills was 127,218. Of the adult employees 86 per cent, and of the children 80 per cent, were able to read and write. The average of the highest daily wages (based on the highest wages paid to any employee by each establishment) was \$2.56, lowest \$0.82, for men; for women the average highest wages were \$1.31, lowest \$0.67, and for children the average wages were about \$0.60. An increase of wages was reported by 87 per cent of the establishments, 7 per cent reported no change, and 6 per cent made no report.

The number of employees reported by the 45 knitting mills was 1,271 adult males, 2,640 adult females, and 777 children, a total of 4,688. The number of persons dependent upon 59 per cent of these mills was 8,992. Of the adult employees 94 per cent, and of the children 93 per cent, were able to read and write. The average hours constituting a day's work was 10. For men the average of the highest daily wages was \$2.09, the lowest \$0.74; for women the average of the highest daily wages was \$1.42, the lowest \$0.53, while for children the average daily wages were \$0.55. An increase of wages was reported by 68 per cent of the establishments, 18 per cent reported no change, and 14 per cent made no report.

Relative to the employment of children under 12 years of age in the factories, 86 per cent of the employers were opposed to it, while 5 per cent favored it and 9 per cent expressed no opinion; 80 per cent of the knitting-mill employers were opposed to it, while 9 per cent favored it and 11 per cent expressed no opinion.

FURNITURE FACTORIES.—There were 104 furniture factories which reported capital stock, power, class of goods manufactured, wages, hours of labor, days in operation, number of employees, persons dependent on factory, etc. The 104 factories had an aggregate capital of \$3,457,767, used 10,880 horsepower, and employed 6,549 wage-earners. The average of the highest daily wages paid adults was \$2.39; the lowest \$0.91; the average daily wages paid children was \$0.55. Of both the adult employees and of the children 88 per cent could read and write. An increase of wages was reported by 93 per cent of the factories, 3 per cent reported no change, and 4 per cent

made no report. Relative to the employment of children under 14 years of age, 78 per cent of the employers were opposed to it, while 11 per cent favored it and 11 per cent expressed no opinion.

RAILROAD EMPLOYEES.—In this chapter statistics are presented showing, by occupations, for each railroad reporting, the number of employees and average wages paid. The following table shows the number and average daily wages of persons employed on the steam railroads of the State:

NUMBER AND AVERAGE DAILY WAGES OF RAILROAD EMPLOYEES, BY OCCUPATIONS, 1907.

Occupation.	Number of employees.	Average daily wages.	Occupation.	Number of employees.	Average daily wages.
Station agents.....	701	\$1.43	Other shopmen.....	1,831	\$1.51
Other station men.....	2,091	1.04	Section foremen.....	609	1.58
Engineers.....	763	3.13	Other trackmen.....	5,440	1.02
Firemen.....	924	1.44	Switchmen, flagmen, and		
Conductors.....	660	2.55	watchmen.....	515	1.27
Other train men.....	1,947	1.29	Telegraph operators.....	447	1.91
Machinists.....	500	2.61	Other employees.....	2,643	1.18
Carpenters.....	558	1.86			

Resulting from the movement of trains, there were during the year 322 accidents to passengers, 21 fatal and 301 nonfatal; 34 to postal clerks, express messengers, and Pullman employees, all nonfatal; 790 to employees, 53 fatal and 737 nonfatal, and 272 to other persons, 89 fatal and 183 nonfatal, making a total of 163 fatal and 1,255 nonfatal accidents. From other than the movement of trains there were 624 accidents to persons, none of which were fatal.

A presentation is made concerning the operation of each of ten street railways, giving mileage, capital stock, funded debt, gross earnings, operating expenses, income from operation and from other sources, number of passengers carried, and passengers carried per mile of track. A table is also given showing the capitalization, earnings and expenses of the telephone companies doing business in the State, with the number of telephones and the average monthly charge for each.

RECENT FOREIGN STATISTICAL PUBLICATIONS.

CANADA.

Report of the Department of Labor of the Dominion of Canada for the fiscal year (9 months) ended March 31, 1907. 170 pp.

The first of the fourteen sections which comprise this report consists of a general review of the material published during the year in the various issues of the Labor Gazette, a monthly devoted to industrial and labor conditions throughout Canada, and printed in both English and French.

From a statement showing in detail by industries the labor-organization movement in Canada, it appears that in 1904 there were 152 unions formed and 109 dissolved, in 1905 there were 103 unions formed and 101 dissolved, and in 1906 there were 154 unions formed and 85 dissolved. In 1905 in the several Provinces of the Dominion there were 220 employers' associations.

The section of the report devoted to conciliation and arbitration shows that the intervention of the Department of Labor, under the Conciliation Act of 1900, was requested in the settlement of labor disputes involving 900 working people on two occasions during the year 1906-7, and that since the passage of the act in July, 1900, intervention has been requested on 41 occasions.

An account is given of the inquiry by the Royal Commission into the dispute between the Bell Telephone Company and its operators at Toronto.^(a)

Since the passage of the Railway Labor Disputes Act, in 1903, there has not been a strike on any of the railroads of the Dominion of such a nature as to seriously affect transportation. During the year 1906-7 there was not even occasion to apply the provisions of the act to a threatened strike.

Notice is given of the important features of the Industrial Disputes Investigation Act, 1907.^(b)

During the fiscal year the "fair wages" officers of the department prepared fair-wages schedules for insertion in 150 separate contracts,

^a For a digest of the report of this commission see Bulletin of the Bureau of Labor, No. 75, pp. 611-613.

^b For the provisions of and comments upon this law see Bulletin of the Bureau of Labor, No. 76, pp. 657-740.

which were awarded, or were about to be awarded, during the year. Of this number, 53 were in connection with public buildings or works being executed under contract for the department of public works, 84 in connection with contracts or subsidy agreements entered into with the department of railways and canals, 10 for contracts awarded by the department of marine and fisheries, and 3 for insertion in contracts awarded by the commissioners of the Transcontinental Railway. In every case the rates of wages fixed in the fair-wages schedule were based upon what were considered fair and reasonable rates in the localities in which the work was to be undertaken. Since the establishment of the department of labor, in 1900, the fair-wages officers have prepared some 935 fair-wages schedules for public contract work.

During the calendar year 1906 there were 138 labor disputes in Canada, which involved 21,606 working people directly and 4,408 working people indirectly. The loss of time amounted approximately to 490,400 working days. The disputes affected 864 establishments directly and 79 indirectly. The principal causes of disputes were demands for increase in wages and against the employment of particular persons. Of the 130 disputes which were terminated during the year, 67 were settled by negotiations between the parties concerned, 28 by the resumption of work without negotiations, 18 by the employment of other work people in the places of the strikers, 4 by conciliation, 3 by arbitration, and the remainder by other methods. There were 50 strikes which resulted in favor of the employers, 41 in favor of the employees, 23 were compromised, 5 were partly successful for the strikers, and the results of the remaining strikes were indefinite or unknown. During the years 1901 to 1906 there were 715 trade disputes in Canada—104 in 1901, 123 in 1902, 160 in 1903, 103 in 1904, 87 in 1905, and 138 in 1906. Out of the total disputes during the period, the causes of 310 of them related to wages and hours of labor; 350 disputes were settled by negotiations between the parties concerned, and 61 by conciliation and arbitration; 244 disputes resulted in favor of employers, 214 in favor of employees, and 166 were settled by compromise.

There were in Canada during the calendar year 1906, 1,107 fatal and 2,745 nonfatal industrial accidents. Of fatal accidents the greatest number (252) was in the railway service, and of nonfatal accidents the greatest number (562) was in the metal trades. Mining had 119 fatal and 174 nonfatal accidents, while in lumbering there were 119 fatal and 156 nonfatal accidents.

Accounts are given in two sections of the report of the action of the department of labor in reference to false representations to induce or deter immigration to the Dominion and of the administration of the alien labor laws.

GERMANY.

Die Eingetragenen Genossenschaften im Königreich Bayern. Nach dem Stande in den Jahren 1902 und 1903 und mit einer vorläufigen Übersicht über den Stand von Ende 1905. Herausgegeben vom Kgl. Statistischen Bureau. Munich, 1906. 47+83 pp.*

The rapid increase in the number of cooperative societies in the Kingdom of Bavaria during the last 15 years led the statistical bureau of that State to make this report on their scope and operations.

In the German Empire in 1902 there were 20,755 cooperative societies with 3,139,519 members; in Bavaria there were 3,433 societies with 349,328 members. The preliminary figures for the end of 1905 show that there were in that year in Bavaria 4,073 societies with 434,145 members. The average membership in Bavaria in 1902 was 102 per society. This figure shows a tendency for the smaller type of society to predominate. In the same year the average membership of societies in other German States was as follows: Prussia, 145; Saxony, 484; Wurttemberg, 157; Baden, 221; Hessen, 138. The ratio of membership to population is as follows: Out of each 100,000 population, the number of members for the whole Empire is 1,809; in Prussia it is 1,567; in Bavaria, 1,621; in Saxony, 3,027; in Wurttemberg, 3,323; in Baden, 3,231; in Hessen, 3,560, and in Alsace-Lorraine, 1,388. The three States of Bavaria, Prussia, and Alsace-Lorraine therefore show a smaller ratio to population than the average for the Empire.

The experience of Bavaria shows that the cooperative movement began in the cities and has extended gradually to the rural districts, and that at present the proportion of members to population is higher in the rural districts than it is in the cities. The development in the rural sections was at first less rapid, largely owing to the unrestricted liability of members. In 1889 the law regulating cooperative societies was revised and permitted limited liability of members, authorized the formation of federations of societies, and required periodical revisions of operations. In addition the Bavarian government took steps to encourage their creation, particularly agricultural societies. The most important of these were the creation of the Bavarian Federation of Cooperative Loan Societies and of the Central Loan Fund, with which only such societies as were members of the federation could affiliate. Recently the Government has encouraged the formation of the Bavarian Handworkers' Cooperative Society and of the Central Fund of the Handworkers' Cooperative Society in Munich. The latter has expended considerable sums in supporting individual societies, such as those for the conduct of supply depots.

On the question of liability of members the returns show that in 1902, of the 3,433 societies, 3,046 societies with 266,545 members had unlimited liability, and 387 societies with 81,779 members had limited liability. On the basis of membership 76.3 per cent of the members had unlimited liability, 23.4 per cent had limited liability, and 0.3 per cent could not be definitely placed in either group. The character of work undertaken has a close relation to the question of the limitation of the liability of the members, as is shown by the fact that the societies with unlimited liability are almost exclusively cooperative loan societies.

The number and membership of the cooperative societies, classified according to their principal objects, in 1902 and 1903, are as follows:

NUMBER, MEMBERSHIP, AND OBJECT OF COOPERATIVE SOCIETIES IN BAVARIA,
1902 AND 1903.

Object of society.	1902.		1903.	
	Number of societies.	Number of members.	Number of societies.	Number of members.
Loan societies	2,593	262,800	2,746	283,186
Societies for purchase of raw materials:				
(a) Industrial	13	899	23	645
(b) Agricultural	210	22,000	214	22,780
Retail dealers' societies for the purchase of commodities....	5	558	7	728
Societies for procuring machinery:				
(a) Industrial	20	909	21	982
(b) Agricultural	92	2,606	107	2,928
Warehouse, elevator, etc., societies:				
(a) Industrial	10	686	10	686
(b) Agricultural	12	536	13	545
Raw material and warehouse societies:				
(a) Industrial	19	843	24	1,030
(b) Agricultural	5	234	7	816
Productive societies:				
(a) Industrial	8	208	8	216
(b) Agricultural—				
1. Creameries, dairies, etc.....	228	10,604	279	13,237
2. Other	87	2,152	42	2,588
Societies for procuring and maintaining brood animals.....	7	884	8	928
Consumers' societies.....	123	88,802	146	47,356
Dwelling and building societies.....	37	5,333	36	5,185
Miscellaneous societies.....	9	324	9	487
Total.....	3,433	349,328	3,700	383,823

The most prominent feature of the preceding table is the predominance of the loan societies. Of these the agricultural loan societies are by far the most numerous, 2,459 such societies in 1902 having a membership of 192,564, and 2,606 in 1903 having a membership of 212,891. The forms of society next in frequency are the agricultural societies for carrying on productive operations and for the purchase of raw materials. The consumers' societies are fourth in number and second in membership.

The federal law of 1889 regulating cooperative societies requires them to submit their operations and financial condition to an examination at least once every 2 years. This examination must be made

by an expert accountant who may not be connected with the society. To meet this requirement the societies have organized federations for the employment of expert accountants to conduct these examinations. In 1902 there were 15 such federations legally authorized by the Government to conduct this work. Only 15 per cent of the societies were not affiliated with these federations at this date.

The relation of the individual members to the total liability of the society is an important feature of the cooperation problem. According to the law on cooperative societies the liability of each member is equal to his share in the society, and a limit must be placed by the constitution on the amount of stock held by any one person. The statistics for Bavaria show that in 1902 the highest individual liability was 10,000 marks (\$2,380) in the case of 1 society; 5,000 marks (\$1,190) for 3 societies; 4,000 marks (\$952) for 1 society; 3,000 marks (\$714) for 1 society; 2,500 marks (\$595) for 1 society; 2,000 marks (\$476) for 5 societies; 1,500 marks (\$357) for 1 society, and 1,200 marks (\$285.60) for 3 societies. These are the highest ranges and the others grade down to very small amounts. The class of business conducted by the societies also influences the range of liability of the members. Thus in the case of loan societies with limited liability there was a tendency to have shares of larger amounts, as, for instance, shares and corresponding liability of 1,000 marks (\$238) each. On the other hand, in the case of the societies conducting retail stores, there was only one instance of the shares being 200 marks (\$47.60), all the others being less than 50 marks (\$11.90) each.

The formation of federations of cooperative societies was made possible by that section of the law of 1889 which permitted societies to be formed with limited liability. Previous to that date members of societies objected to the creation of federations because the rule requiring unlimited liability would lay upon them possible obligations of larger amounts than they cared to be responsible for. On December 31, 1902, there were 15 such federations; 5 of them were composed of loan societies; 2 were composed of agricultural, and 1 of industrial societies for the purchase of raw materials, and 7 were composed of societies for the marketing of agricultural products.

An appendix to the report shows the preliminary statistical data for the year 1905.

Die Arbeits- und Lohnverhältnisse in den städtischen Betrieben 1906. Mittheilungen des Statistischen Amtes der Stadt Magdeburg. Magdeburg, 1906. 74 pp.

This volume presents the facts concerning the conditions of employment and the wages of the employees of the city of Magdeburg. The report states the contract of employment, terms upon which

employees are engaged, methods of dismissal, of furlough, etc. The hours of labor by the day, the duration of night work, the regulations for overtime, Sunday work, etc., for the various classes of occupations are given. The methods of wage payments, time wages, piece wages, payments in kind, etc., are stated in detail. The provisions for sickness, accident, invalidity, and death are specified. Statistical tables on these subjects are also given.

GREAT BRITAIN.

Annual Report of the Chief Inspector of Factories and Workshops for the year 1907. Report to the Secretary of State for the Home Department. xliii, 321 pp.

At the end of the year 1907 there were upon the registers of the factory department 107,321 factories, 7,210 laundries (with and without power), and 142,662 workshops, or a total of 257,193 establishments, an increase over 1906 of 2,004 establishments. The works under inspection did not include docks, warehouses, buildings, etc., or home-work premises. The number of persons employed in factories, including laundries with power was (approximately) 4,750,000, and in workshops, including laundries without power, 750,000.

For purposes of inspection the United Kingdom is divided into five inspection districts, each under a superintending inspector, as follows: Southern division, midland division, northeastern division, northwestern division, and the Scotland and Ireland division. The report of each supervising inspector comprises for his district an account of the organization of the working staff and the scope of the work of inspection; complaints from officials, operatives, and others respecting sanitation, safety measures, hours of labor, illegal employment, etc.; industrial developments and state of trade in the district; sanitary conditions and improvements; industrial accidents; safety devices, their efficiency and defects, etc.; industrial poisoning (anthrax, arsenic, mercury, and lead poisoning, etc.); dangerous trades; employment and hours of labor, especially relating to children and women; holidays, overtime, half time, night work, and meal times; the employment of children as half timers and of those not exempt from school; action of the local sanitary authorities in connection with the factory department; administration of the law relating to particulars for piecework; operation of the truck acts; prosecutions for violations of the factory laws; inquest notices, etc. In addition there are reports from the superintending inspector for the dangerous trades, the principal lady inspector, the inspector of textile particulars, the electrical inspector, and the medical inspector. Special reports are also given on the manufacture of shuttles from African box-

wood, on lace dressing, on shipbuilding accidents, and on the manufacture of matches. Tables presenting in detail and in summary form statistics pertaining to the various features of factory and workshop employment accompany the inspection reports.

The establishments added to the registers of the factory department during 1907 numbered 28,445 (510 textile and 8,838 nontextile factories, 274 laundries with power and 528 without power, and 18,295 workshops), while those of the different classes removed from the registers numbered 26,441, resulting in a net gain in the establishments added of 0.8 per cent.

During 1907 there were 124,325 industrial accidents reported, 80,847 being reported to inspectors only, and 43,478 to certifying surgeons. Those reported to inspectors only were nonfatal in result and of a minor character. In the table following the accidents reported to certifying surgeons are shown by degree of injury (fatal and nonfatal) and by sex and age:

ACCIDENTS REPORTED TO CERTIFYING SURGEONS, 1907.

Sex and age of persons injured.	Fatal accidents.	Increase over 1906.	Non-fatal accidents.	Increase over 1906.	Total accidents.	Increase over 1906.
Males	1,157	59	37,129	6,748	38,286	6,807
Females	22	4	5,170	971	5,192	975
Total	1,179	63	42,299	7,719	43,478	7,782
Adults (over 18)	1,071	60	38,168	5,836	39,239	6,895
Young persons (13 to 18)	108	4	8,962	1,846	9,070	1,850
Children (12 to 14) .....	.....	• 1	189	38	189	37

• Decrease.

In the textile industries there were 6,542 accidents, of which 95 were fatal and 6,447 nonfatal; in the nontextile industries there were 33,768 accidents, of which 755 were fatal and 33,013 nonfatal; and in laundries, docks, buildings under construction, etc., there were 3,168 accidents, of which 329 were fatal and 2,839 nonfatal. In the textile industries the greatest number of accidents was in cotton spinning and weaving, with 49 fatal and 3,899 nonfatal accidents, followed by wool, worsted, and shoddy, with 30 fatal and 1,461 nonfatal accidents; in the nontextile industries the greatest number of accidents was in shipbuilding, machines and machinery, and the metal trades, with 442 fatal and 21,021 nonfatal accidents.

The cases of industrial poisoning reported in 1907 numbered 653, of which 40 resulted fatally. Of the total 619 were cases affecting adults, of which 39 were fatal, and 34 were cases affecting young persons and children, of which 1 was fatal. There were 578 cases of lead poisoning, of which 26 were fatal, 7 cases of mercury poisoning,

1 case of phosphorus poisoning, 9 cases of arsenic poisoning, of which 2 were fatal, and 58 cases of anthrax, of which 11 were fatal.

The report of the superintending inspector for dangerous trades shows that during 1907 there were in the United Kingdom, where particular dangers arise and special precautions are necessary, 18,697 industrial establishments operating under special rules and regulations.

Generally the employment of children as half timers is becoming less frequent, though in certain towns the numbers have increased, especially in districts largely devoted to the cotton industry.

Compensation for Industrial Diseases. Report to the Secretary of State for the Home Department. 1908. 4+73 pp.

This document is a supplementary report of the committee appointed to inquire and report what diseases and injuries, other than injuries by accident, were due to industrial occupations, were distinguishable as such, and could properly be added to the diseases enumerated in the third schedule of the Workmen's Compensation Act, 1906.

In the main report of the committee it was stated, with respect to the addition of glass workers' cataract to the schedule, that the question was one in which statistics were of the first importance. In the present report is given the results of an investigation made by the medical member of the committee with a view to determining the incidence of cataract among glass workers generally. He examined the eyes of 513 persons exposed to furnace glare in glass works and, for comparison, of 278 persons not so exposed. He found that all classes of glass-furnace workers appeared to suffer, and that among them between the ages of 30 and 40 opacities of one kind or another in the lens were about five times, between 41 and 50 about twice, and at 51 years of age and over more than three times as frequent as in those engaged in other work.

After devoting careful consideration to the question the conclusion was arrived at that if glass workers' cataract were added to the schedule in the same manner as other industrial diseases, the work people would lose more than they would gain, as employers would be likely to impose a medical examination of the eyes and those who revealed symptoms of opacity in the lens would find their chances of obtaining employment seriously prejudiced. It was recommended therefore that the disease be added to the first column of the schedule of industrial diseases for which compensation may be claimed; that "Processes in the manufacture of glass involving exposure to the glare of molten glass" be added to the second column; but that the compensation should be made payable only in cases

where an operation is undergone and for a period not exceeding six months. The period is thus limited to the time immediately preceding and succeeding the operation. The operation for the removal of cataract, it is stated, is attended by practically no danger.

Consideration was also given to the disease known as "telegraphists' cramp." This disease was referred to as an occupational neurosis or fatigue spasm. It shows itself by the production of jerkiness and illegibility in operating and a disability for work limited to the particular movements involved. The committee was of the opinion that the disease should be considered specific to the employment and that it should be added to the schedule as a subject for compensation.

Report from the Select Committee on Home Work, August 8, 1907.
1908. x, 290 pp.

This report was made August 8, 1907, and presents the evidence taken before a committee of the House of Commons appointed June 4, 1907, "to consider and report upon the conditions of labor in trades in which home work is prevalent, and the proposals, including those for the establishment of wages boards and the licensing of work places, which have been proposed for the remedying of existing abuses." The committee in its report makes no comment on the evidence and recommends that a committee on the same subject be appointed at the next session of Parliament.

WAGES BOARDS.—Much valuable testimony was brought out by the questions of the committee. Among others, Mr. G. R. Askwith, a barrister who had acted as an arbitrator, umpire, and conciliator during a number of years in many trades disputes, appeared in favor of the establishment of wages boards. This witness believed that difficulties would be met with in the establishment of minimum rates of payment, but that they were difficulties which a practical wages board could overcome. The cost of such boards was not considered by him to be a serious factor in comparison with the volume of business done by the interested trades and leaving out of consideration the cost of strikes.

LICENSING.—Another witness who gave valuable testimony was Miss Clara Collett, an official of the Board of Trade, the senior investigator of women's industries. During the previous year, under her direction over 1,700 home workers in the making of women's clothing were visited, principally in the north of Ireland and in London. This witness was of the opinion that the proposal to license work places would be of little benefit to the workers. A refusal to issue a license for sanitary reasons would only result in depriving the worker of possible earnings without improving conditions. According to her testimony, the majority of home workers live in well-

kept houses and do not need the sanitary inspection. They are not well to do from the standpoint of the middle classes, but they feel that there are a great many people poorer than themselves. In London 60 per cent of the home workers visited were married women, hence not entirely dependent upon their earnings. Such persons will not work for the low rates that a widow with two or three children would accept. According to the witness, the cases where the earnings are very small and the conditions distressing are greatly in the minority. Numerically there may be many such cases, but these, when particularly noticed, produce an exaggerated impression.

Under the Factory and Workshop Act, 1901, a room in which as few as two persons are employed may be designated a "tenement workshop." The statement that there were "very few foreign workers amongst the home workers" is therefore hardly comparable with American conditions.

The number of women and girls registered under the Factory and Workshop Act is about 400,000. This number deducted from the number shown by the census as employed in the clothing trades gives 300,000 as the approximate number of women and girls engaged in the clothing trades and not in the factories and workshops.

Report from the Select Committee on Home Work, July 22, 1908.
1908. xlix, 216 pp.

This document contains the report of a committee of the House of Commons, appointed February 11, 1908, in accordance with the recommendation of the committee on home work which reported in August, 1907. The duties of the committee of 1908 as outlined in the order of reference, were the same as those of the committee appointed in the preceding year. The present report was made July 22, 1908.

Home workers in Great Britain are divided into three main groups. In the first and second are those who are under the protection of the Factory and Workshop Act, by reason of their employing either members of their own families or outsiders. The third group consists of those who employ no assistants, but undertake work for others and do it in their own homes. It is with this group that the committee was mainly concerned. In this group are those women who are dependent upon their work for support, those who obtain outside work only when their husbands are out of employment, and the wives and daughters of men in regular employment who wish to increase the family income.

The committee was convinced that the earnings of a large number of people—mainly women who work in their homes—are so small as alone to be insufficient to sustain life in the most meager manner, even when they toil hard for extremely long hours. The consequence is that when those earnings are their sole source of income the con-

ditions under which they live are often not only crowded and insanitary, but altogether pitiable and distressing. More or less similar conditions are stated to prevail, not only in all the great countries on the continent of Europe, but also in the United States and in Australasia.

WHY THEIR EARNINGS ARE SMALL.—The reasons why the earnings of many home workers are small are many and varied. Among them are the following:

Much of the work is sewing, which requires but little previous training and can be done at irregular hours and in the intervals of household duties. Since those persons who are quickest, most regular, and most reliable are given preference by employers when selecting factory workers, those who are slow, owing to age, feeble health, inexperience, incompetence, or lack of power, energy, or disposition to work, drift into home work to earn a livelihood. These conditions and influences tend to make the supply of home workers very large and elastic.

A large proportion of the home workers are engaged in the production of articles in competition with machinery, and the cost of making the articles by machinery fixes the rate which can be paid to them. If the same rate per article be paid to the two classes of workers, the home worker will be able to earn only one-fourth as much per hour as the factory worker. In such cases, the trouble is not that the rate of pay is unduly low, but that the home worker is handicapped by her conditions and appliances. Many articles made by the home workers are such that a very large number of those who require them can make them for themselves. Unless the price at which these articles are sold is low, those who would otherwise be the purchasers will buy the materials and make the articles at home. In some classes of work the competition of foreign-made articles was said to be an important factor in depressing the price paid.

In many trades middlemen intervene between the factory and the home worker, making a charge for distributing and collecting the work, so that the worker does not obtain even the low price paid.

Since the women home workers are very poor and helpless and work separately, they are unorganized. Hence they can not act together to promote common interests and are powerless to resist the tendency to reduce rates, caused by the keen competition of the employers.

The imposition by law of conditions and obligations upon owners and occupiers of factories and workshops tends to encourage employers to resort to home work in order to avoid compliance with the requirements of Parliament and the visits and supervision of the inspectors appointed to enforce them. The more numerous and stringent those regulations become the greater is the temptation to evade

them by employing persons who work under conditions to which they do not apply.

PROVISIONS OF THE EXISTING LAW REGARDING HOME WORK.—Home workers' premises come under the operation of the general law of public health relating to sanitation, etc., of dwellings and under special provisions in the Factory and Workshop Act, 1901. The most important is that contained in section 108. This gives power to the district council to prohibit the giving out of work to be done in premises which are injurious or dangerous to the health of the persons employed therein. For the purpose of furnishing the information necessary to enable the local authority to exercise this power persons giving out work are required to keep a list of all persons to whom work is given out, and to send copies of such lists semiannually to the local authority. In practice these lists are found to be usually incomplete and furnish no sufficient indication of the number of outworkers in any trade.

An important provision in connection with the payment for work is contained in the "Particulars" section of the Factory and Workshop Act, 1901. This provision, the enforcement of which is placed upon the inspectors of factories, is intended to secure to the outworker information beforehand as to the price he is to receive and to protect him against arbitrary alterations or reductions.

The committee was of the opinion that the provisions of existing law had failed to produce any real amelioration of the condition of home workers, and that legislation of a far-reaching character was required.

AUSTRALASIAN EXPERIENCE.—Careful attention was given to the report of a commissioner appointed by the home department to investigate the working of the systems adopted in Australia and New Zealand. This report made it clear that, apart from the valuable suggestions which are to be derived from the application of general principles and novel legislation to widely different conditions, there was not much information or guidance with regard to the difficulties which surround the problem of home work to be derived from the conditions, legislation, and experience of these countries. In the first place, there the home worker is a very small element of the population. Secondly, the demand for women workers exceeds the supply. Lastly, the various wages and other boards have left the home workers almost entirely untouched.

SUGGESTED REMEDIES.—The two suggestions which attracted the most attention were:

That it should be made illegal to give work to an outworker unless she had previously obtained a license from a factory inspector, authorizing her to do work for a specified time in the premises named in the license.

That in certain trades a wages board, consisting of representatives of employers and working people and a neutral chairman, should be established, with power to fix the minimum rate of wages to be paid, the payment of a lower rate to be a punishable offense.

LICENSING.—Owing to the enormous increase in the number of inspectors that would be necessary should the licensing of the workers be required and to the difficulty that the poor might experience in obtaining such license, the committee did not approve of the first suggestion. It was recommended that home workers be required to secure certificates of registration from the local authorities, such certificates to be issued without fee or condition, with the aim of obtaining complete and accurate registration.

WAGES BOARDS.—The second suggestion was considered by the committee to go to the root of the matter—the poverty, the miserably inadequate income of so many of the home workers being the great difficulty of the situation. It was recognized that the difficulties which such boards would have to surmount would be very great. There is in some trades an enormous number and complication of articles, processes, subdivisions, and patterns. Then there are the constant changes, especially in those trades where fashion is the dominating factor, and different employers have a vast number of different methods and designs. Any attempt to fix prices for every process, size, pattern, and variation would appear to be almost interminable. There is also the difficulty of submitting new ideas and designs to rival employers who may be members of the board. The question also arises, Should the piece rate be based upon the time in which a worker can complete the article in a factory with modern machinery or is it to be based upon the time taken in the conditions with which he works at home?

Much importance was attached to the experience and opinion of one who had served for many years as arbitrator and conciliator in trade disputes of various kinds. This gentleman was of the opinion that “wages boards are workable and practicable, and would be beneficial, and ought to be tried.”

Upon the question of the general policy of Parliament providing for the fixing of a minimum rate of payment for work the committee was of the opinion that it was quite as legitimate to establish by legislation a minimum standard of remuneration as it was to establish such a standard of sanitation, cleanliness, ventilation, air space, and hours of work. It was considered that it would be better that any trade which could not exist if such a minimum of decent and humane conditions were insisted upon should cease. It was believed that the establishment by law of minimum rates of payment for such classes of workers as are unable to obtain for themselves such rates of pay-

ment as may be reasonably regarded as the lowest upon which they can exist would result in benefit to employers, work people, and the general public.

RECOMMENDATIONS AS TO WAGES BOARDS.—The committee recommended that each wage board should fix a general minimum rate of time payment for an average home worker in the trade for which it acts, and also for any branch or process in the trade for which a different rate might be desirable, such rate to be not less than the general minimum rate. The boards should also fix minimum piece rates for any work done by home workers, these piece rates to be such as would enable an average worker to earn not less than the minimum time rate.

SUMMARY OF CONCLUSIONS.—The committee reported that it was desirable:

(1) That there should be legislation with regard to the rates of payment made to home workers who are employed in the production or preparation of articles for sale by other persons.

(2) That such legislation should at first be tentative and experimental, and be limited in its scope to home workers engaged in the tailoring, shirt making, underclothing, and baby-linen trades, and in the finishing processes of machine-made lace. The home secretary should be empowered, after inquiry made, to establish wages boards for any other trades.

(3) That wages boards should be established in selected trades to fix minimum time and piece rates of payment for home workers in those trades.

(4) That it should be an offense to pay or offer lower rates of payment to home workers in those trades than the minimum rates which had been fixed for that district by the wages board.

(5) That the delivery and collection of work done at home should be done by persons in the direct employ and pay of the employer. Where that was not done, the amount which a worker could earn in a specified time should be calculated on a basis which included the time spent in fetching and returning the work as time occupied in doing the work.

(6) That all home workers who are employed by other persons in producing or preparing articles for sale should be required to register their name, address, and class of work at, and receive a certificate of such registration from, the offices of the local authority, and that the keeping of accurate outworkers' lists by employers should be strictly enforced.

(7) That it should be an offense for any person to employ any home worker to produce or prepare any articles for sale by another person unless the worker produce a certificate of registration.

(8) That the provisions of section 9 of the Public Health Act, 1875, with regard to factories and workshops which are not kept clean or are ill-ventilated or overcrowded should be extended to rooms in which home work is done, and power should be given to sanitary

and factory inspectors to inspect them and secure the enforcement of the law.

(9) That the full protection of the Truck Act should be secured to home workers.

The Wages Boards and Industrial Conciliation and Arbitration Acts of Australia and New Zealand. Report to the Secretary of State for the Home Department. 226 pp.

In this volume is contained the report of Mr. Ernest Aves, a commissioner appointed for the purpose of conducting an investigation into "(1) the system of wages boards which have been established in some of the Australian colonies; their working; the measure of success attained, with reference especially to the prevention of sweating; and the conditions which have made success possible; (2) the systems of compulsory arbitration in industrial disputes which have been established in Australia and New Zealand; their working; the measure of success attained; and the conditions which have made success possible; (3) the working of the acts for the regulation of hours of employment in shops in force in Australia and New Zealand."

WAGES BOARDS.—In Victoria, which may be taken as representative of the States having wages boards, 49 special boards were found to have been established. They consisted of representatives of both employers and work people, appointed for three years, and determined questions of wages, overtime, hours, and the proportion of "improvers" to adults, in their respective trades.

With respect to the fear that the minimum wage rate established by the boards might become the standard rate in each trade, the commissioner states that "absolute uniformity of rating in any occupation appears to be quite the exception."

The replies received upon forms circulated among both employers and work people indicate a widespread feeling that under the wages boards general conditions have improved, but that the boards have had no appreciable effect on the quality or the price of the product or on the regularity or certainty of employment. There is also a widespread belief that the boards have been instrumental in abolishing, or at least in modifying the evils of "sweating."

This experience, however, has been for the most part confined to the clothing trades. These trades have been carried on in a small, rich, highly centralized, and comparatively homogeneous community, free, save in isolated instances, from the extremes either of poverty or wealth. They have flourished during times of increasing prosperity, under conditions in which labor has frequently been scarce, and in markets that are protected both by legislation and by geographical

position. The experience of Victoria, valuable and interesting though it is, is thus not conclusive, if only because too brief, too simple, and too exclusively connected with an era of prosperous trade.

INDUSTRIAL CONCILIATION AND ARBITRATION.—In New Zealand registered societies consisting of two or more employers or of seven or more workers may bring any dispute arising as to industrial matters before a board of conciliation. These boards are composed of both employers and workmen engaged in the industry in which the dispute arises. The board of conciliation may refer the case direct to the arbitration court; or after taking evidence the board may make recommendations which if accepted by the parties have the force of law. If the recommendations are ignored for a month they become law, but if rejected the dispute is carried to the court of arbitration. The decisions of this court are binding and if within the scope of the law are without appeal. Many cases have come before the court, and those are given in which increased wages and (in most cases) shorter hours have been fixed.

It is stated, however, that it is too soon to draw final conclusions as to the effect of the act—on efficiency, alike of employers and employed; on industrial character; on the suitability of choice exercised by the young in the selection of a trade; on industrial training; on the stability of industrial conditions; and, perhaps above all, on the question of relationship between employers and employed.

In an appendix are laws and decisions of the courts upon the subjects treated, specimen determinations and awards, copies of forms circulated, and replies received.

ITALY.

La Donna nell' Industria Italiana. 1905. Ufficio del Lavoro, Ministero di Agricoltura, Industria e Commercio. 59, 157 pp.

This report, issued by the Bureau of Labor of the Italian Department of Agriculture, Industry, and Commerce, relates to the employment of women in industry.

The present report, which bears a close relationship to a preceding one on maternity funds, consists of two parts, the first of which contains a text analysis and statistical summaries of the information presented, and the second part consists of detailed statistical tables.

The material used in the preparation of this report was transmitted to the department by the prefects of the various provinces to whom employers of women and children are required to make annual returns in conformity with the law of June 19, 1902, regulating the employment of women and children.

During the year ending June 30, 1904, returns were made by 14,150 establishments. The number of males and females of various ages employed in these establishments, with the percentage of total employees found in each group, was as follows:

NUMBER AND PER CENT OF MALES AND FEMALES EMPLOYED IN 14,150 ESTABLISHMENTS MAKING RETURNS DURING THE YEAR ENDING JUNE 30, 1904, BY AGE GROUPS:

Age.	Males.		Females.		Total.	
	Number.	Per cent of total employees.	Number.	Per cent of total employees.	Number.	Per cent of total employees.
Under 12 years.....	4,379	0.5	12,185	1.5	16,564	2.0
12 and under 15 years.....	37,419	4.5	69,926	8.5	107,345	13.0
15 and under 21 years.....	79,975	9.6	151,606	18.3	231,481	27.9
21 years and over.....	293,142	35.4	180,619	21.7	473,761	57.1
Total.....	414,915	50.0	414,236	50.0	829,151	100.0

From the foregoing table it will be seen that in the establishments reporting 15 per cent of the employees were below the age of 15 years. Of these one-third were males and two-thirds were females. Among the employees 15 and under 21 years of age the ratio was 9.6 males to 18.3 females. For employees 21 years of age and over the ratio was 35.4 males to 21.7 females. The number of males of all ages employed in these establishments was slightly in excess of the total number of females.

In the textile industry, which furnished 49 per cent of the employees reported, the number of persons of both sexes below the age of 15 years equaled 19.5 per cent of the total number of employees. The ratio between the two sexes was 2.2 males to 17.3 females. For the different age groups represented in the textile industry the proportion of males and females was as follows: Below 12 years, 0.2 males to 2.7 females; 12 to 15 years, 2.0 males to 14.6 females; 15 to 21 years, 4.1 males to 29.4 females; 21 years and over, 14.9 males to 32.1 females; all ages, 21.2 males to 78.8 females.

In the table which follows a classification is made, by industry and earning capacity, of 38,273 females below the age of 15 years employed in 1,906 establishments on November 30, 1903, the percentage of such persons among all females employed being shown for each industry:

CLASSIFICATION, BY INDUSTRY AND EARNING CAPACITY, OF 38,273 FEMALES UNDER FIFTEEN YEARS OF AGE EMPLOYED AT GAINFUL OCCUPATIONS AND PER CENT OF TOTAL FEMALE EMPLOYEES REPORTING.

Industry.	Estab-lish-ments.	Female em- ployees under 15 years of age.		Per cent of females under 15 years of age earning daily—			
		Num-ber.	Per cent of total fe- male em- ployees re- porting.	50 cen- tesimi (\$0.0965) and less.	51 to 75 cen- tesimi (\$0.0984 to \$0.1448).	76 to 100 cen- tesimi (\$0.1467 to \$0.1980).	101 cen- tesimi (\$0.1949) and more.
Agriculture	12	37	5.8	16.2	81.1	2.7	.....
Extraction of minerals and manufacture of mineral products	56	210	11.1	35.7	48.1	14.8	1.4
Metal working and machine construction.	61	245	14.3	58.9	29.8	14.3	2.0
Work in wood, straw, and similar materials.	39	251	12.9	42.0	38.6	16.9	2.6
Chemical products	66	279	5.6	44.8	36.2	17.6	1.4
Paper, printing, and publishing	196	568	11.0	37.0	48.4	13.9	.7
Textiles	1,223	35,239	23.1	37.0	48.4	14.0	2.6
Clothing, hides, etc	160	780	12.0	60.8	32.2	6.0	1.0
Food products	58	168	12.1	40.5	44.1	14.3	1.1
Tobacco	16	283	2.2	31.8	68.2	.....	.....
Other industries	20	283	18.5	52.4	40.8	6.8	.....
Total	1,906	38,273	20.0	34.9	48.9	13.8	2.4

Of the 38,273 female employees below the age of 15 years shown in the table it will be observed that nearly 35 per cent earned 50 centesimi (\$0.0965) and less per day. The number earning from 51 centesimi (\$0.0984) to 100 centesimi (\$0.1930) per day constituted 62.7 per cent of the total number, while the number of those whose earnings amounted to 101 centesimi (\$0.1949) and more was 2.4 per cent of the total.

The following table shows, with slight modifications, similar statistics for 197,482 females 15 years of age and over:

CLASSIFICATION, BY INDUSTRY AND EARNING CAPACITY, OF 197,482 FEMALES 15 YEARS OF AGE AND OVER EMPLOYED AT GAINFUL OCCUPATIONS ON NOVEMBER 30, 1903.

Industry.	Estab-lish-ments.	Fe- males 15 years of age and over.	Per cent of females 15 years of age and over earning daily—						
			50 cen- tesimi (\$0.0965) and less.	51 to 75 cen- tesimi (\$0.0984 to \$0.1448).	76 to 100 cen- tesimi (\$0.1467 to \$0.1980).	101 to 150 cen- tesimi (\$0.1949 to \$0.2895).	151 to 200 cen- tesimi (\$0.2914 to \$0.3860).	201 to 250 cen- tesimi (\$0.3879 to \$0.4825).	251 cen- tesimi (\$0.4844) and over.
Agriculture	25	859	0.2	59.1	34.5	5.6	0.6	.....	.....
Extraction of min- erals and manu- facture of min- eral products	76	1,860	2.5	22.9	33.0	29.7	7.6	2.9	1.4
Metal working and machine con- struction	100	1,958	2.5	9.0	25.4	49.0	10.5	2.9	.7
Work in wood, straw, and simi- lar materials	64	2,188	4.0	11.4	34.7	39.9	8.1	1.6	.8
Chemical products.	88	5,662	2.4	5.8	20.0	48.0	20.8	3.0	.5
Paper, printing, and publishing	305	5,835	5.7	19.8	27.8	36.2	7.8	2.3	.4
Textiles	1,768	156,150	1.1	11.1	30.9	43.7	10.0	2.4	.8
Clothing, hides, etc.	264	8,685	5.5	8.7	19.3	37.1	17.8	7.9	3.7
Food products	91	1,691	4.8	10.7	27.1	33.4	21.5	2.8	.2
Tobacco	16	12,577	.6	.8	.9	12.7	52.9	29.3	2.8
Other industries	72	1,122	6.4	9.5	9.6	25.8	28.3	13.0	7.4
Total	2,809	197,482	1.6	10.7	28.0	40.7	13.4	4.5	1.1

From the returns submitted by 2,909 establishments a table was prepared which shows, by industries, the percentage of births occurring among 191,947 women employees of those establishments during the year ending November 30, 1903. In this table, which is reproduced in part herewith, the actual number of women 15 and under 55 years of age employed during the year has been replaced by the computed number of full-time workers required to do the same amount of work in the time specified. The latter, and not the actual number of employees, forms the basis of the computations.

PERCENTAGE OF CHILDBIRTHS AMONG WORKING WOMEN IN VARIOUS INDUSTRIES FOR THE YEAR ENDING NOVEMBER 30, 1903.

Industry.	Estab-lish-ments.	Working women consid-ered.		Per cent of mar-ried women in com-puted number of full-time work-ers.	Childbirths per 100 full-time workers.			
		Actual num-ber.	Equi-valent (com-puted) num-ber of full-time work-ers.		15 to 20 years of age.	20 to 35 years of age.	35 to 55 years of age.	Of all ages.
Agriculture.....	25	836	555	34.8	0.6	11.9	5.1	7.4
Extraction of minerals and manu-facture of mineral products.....	76	1,806	1,581	21.3	.2	4.4	1.3	2.1
Metal working and machine con-struction.....	100	1,998	1,540	21.6	.2	8.3	1.4	4.4
Work in wood, straw, and similar materials.....	64	2,162	1,792	28.8	.8	9.3	1.1	4.7
Chemical products.....	88	5,565	5,017	42.9	.7	12.6	5.1	7.8
Paper, printing, and publishing.....	305	5,568	4,729	33.6	.5	8.4	3.1	4.5
Textiles.....	1,758	152,225	137,416	24.0	.2	7.5	2.9	3.8
Clothing, hides, etc.....	264	8,481	6,325	30.9	.6	9.7	4.0	5.6
Food products.....	91	1,658	1,289	24.6	.4	6.0	1.1	3.3
Tobacco.....	16	10,632	10,466	50.4	3.3	17.6	5.1	10.4
Other industries.....	22	1,076	909	50.0	.....	8.2	2.8	5.3
Total.....	2,809	191,947	172,140	27.5	.3	8.4	3.4	4.5

L' Industria dei Fiammiferi Fosforici in Italia e la Lotta contro il Fosforismo. 1905. Ufficio del Lavoro, Ministero di Agricoltura, Industria e Commercio. 44 pp.

This report relates to the match industry of Italy and was compiled primarily for the use of the Italian delegates to the international conference for the legal protection of working people, held in Berne, Switzerland, May 8 to 18, 1905.

The volume comprises two parts. In the first part is given a history of the match industry in Italy from the introduction of the lucifer match, about 1830, to the present time. This is followed by tables showing the total production, importation, exportation, and consumption of the several kinds of matches for the years 1896-97 to 1903-4. Figures are also presented showing, by years, the quantity of wood splints and of phosphorus imported into the Kingdom during the period from 1888 to 1904.

A chapter on employees and conditions of labor shows, by Provinces, the number of match factories in operation during the year 1903-4, the days of operation, the hours of labor per day, and the average wages paid. Of 60 establishments for which the number of days of operation in 1904 was reported, 18 factories, employing 909 persons, worked 300 days and more; 25 factories, with 3,410 employees, worked from 280 to 298 days; and 17 factories, having 429 employees, were in operation 275 days and less.

The number of hours of labor per day was reported for 73 establishments. In 49 of these, in which were employed 5,058 persons, or nearly 94 per cent of all persons employed in the industry, the daily working time ranged from 10 to 11 hours. In one factory, with 10 employees, the hours were 11½ per day, while in 4 factories, with 34 employees, a maximum of 12 hours per day was reported. The number of establishments in which the daily working hours were 9½ and less was 19, with 282 employees. A detailed tabular statement shows for the different Provinces the average daily wages paid male and female employees belonging to various age groups.

The second part of the report is devoted to a discussion of the harmful effects upon the health of the working people which result from the inhalation of phosphorus fumes during the various processes employed in the manufacture of matches. A bibliography of works relating to the subject of phosphorus poisoning and other trade diseases is given, as are also certain statistics concerning the match industry of various countries. This is followed by a brief description of the materials which enter into the composition used in the manufacture of matches in the different countries and of the legislative measures taken for the protection of the working people in this industry.

Among the provisions suggested for lessening the evils of phosphorus poisoning are the following:

1. The forbidding of children and minor females to be employed at preparing the paste, dipping the heads, working in the exsiccators, or filling boxes and making up first packages.
2. A limitation of the hours of labor.
3. The complete isolation of the rooms in which the more unhealthy operations are carried on, in order that the toxic gases may not invade the other parts of the building.
4. The provision of larger workrooms, in order to obtain a greater supply of respirable air with a minimum percentage of vapor or irrespirable gas.
5. The procuring of a thorough artificial ventilation of workrooms.
6. The prescribing of a maximum limit of 38° C. (100° F.) of temperature in the exsiccators, in order to prevent an excessive evaporation of phosphorus.

7. The daily cleaning of the floors, machines, and crucibles in which the chemical operations are performed, with renewal of the paint on walls every six months.

8. The furnishing of working clothes to employees, with the obligation that they change their garments in dressing rooms amply provided with facilities for washing the hands and face.

9. The prescribing of a maximum limit for the percentage of yellow phosphorus employed in the preparation of the paste for match heads.

10. The diffusion of vapors of turpentine through atmosphere charged with considerable quantities of phosphorus gas.

11. A requirement that employees rinse the mouth with dentifrice or a solution of permanganate of potash, furnished at the expense of the proprietor of the establishment.

12. A requirement that upon the opening of all new plants or modifications of existing establishments, the new features, or such as are departures from the practices hitherto existing, be subjected to the examination of the inspector of industry, to whom is conceded the right to make suggestions and impose regulations with regard to hygienic conditions.

13. Periodic medical visits to employees, with the obligation upon employers not to put at work persons predisposed to phosphorus poisoning or dental caries, and to remove sick persons.

14. A requirement that physicians report cases of necrosis and of phosphorus poisoning.

15. The provision of security against fire.

16. The provision of security against accidents.

The substitution of red or amorphous phosphorus for the variety in common use is also recommended.

The report concludes with a statement of what has been accomplished in the way of curtailing the use of yellow phosphorus in other countries and of the probable effects which would follow the prohibition of its employment in Italian industries. An appendix contains a brief summary of the proceedings of the international conference for the protection of workingmen held in Berne, Switzerland, May 8 to 18, 1905.

SPAIN.

Preparacion de las Bases para un Proyecto de Ley de Casas para Obreros. Casas baratas.—Published by Instituto de Reformas Sociales. Seccion primera. Madrid, 1907. 459 pp.

The Spanish Institute of Social Reforms, which includes the functions of a bureau of labor, approved, on April 27, 1908, a draft of a bill for the encouragement of the building of cheap and hygienic

workingmen's dwellings and of their ownership by the wage-earners. The text of this draft is published in the *Boletín del Instituto de Reformas Sociales* for May, 1908. This draft is based upon a very exhaustive investigation of the whole problem of the housing of wage-earners, the results of which are published in the present report prepared by the "first" or "economic" section of the institute. This report represents a very comprehensive study and analysis of the most important literature on the housing problem throughout western Europe.

The report consists of three parts. The first part, under the caption of "factors which must be considered in the problem of cheap dwellings," begins with a compilation of facts pertaining to the results of private efforts in Germany, Belgium, France, and England, such as building societies, charitable funds, large employers' efforts to provide dwellings for their employees, the relation between the building societies and government savings banks, etc.

This is followed by a study of the problem of state intervention. To trace the development of the idea of intervention of public authority, whether central, provincial, or municipal—a very careful digest is given of the proceedings of the seven international congresses on housing held in Paris (1889), Antwerp (1894), Bordeaux (1895), Brussels (1897), Paris (1900), Düsseldorf (1902), and Liege (1905). The authors of the report endeavor to show the rapid growth of the idea of direct government intervention within the last decade, the first congress adopting resolutions against any intervention of the state or the local authorities which would compete with private enterprise or influence the level of rents, while at the congress of Liege a resolution was passed unanimously that public authorities should favor and encourage the building and purchase by the workingmen of healthful and cheap dwellings by means of tax exemptions and all proper measures calculated to develop loans on real estate. The concluding chapter of the first part contains a digest of legislation on housing conditions in Great Britain, Belgium, France, Italy, Germany, Austria, and Denmark. The text of the most important laws is given in the appendix.

The second part of the report (76 pages) is devoted to a discussion of housing conditions and the housing problem in Spain. The sources of information in regard to the housing conditions are, first, the investigation into the conditions of the working classes made by the Commission on Social Reforms in 1884; and second, several local investigations made by the Institute of Social Reforms on various occasions in 1904–1906. The data obtained by the first investigation are scarcely recent enough to be of any but historical interest.

The local housing investigations made by the institute within the recent years refer (1) to the mines of Vizcaya, (2) the tile makers in Madrid, (3) the mines of Villanueva.

The mines of Vizcaya are mostly located at some distance from the settlements, and the employers had found it necessary to construct frame barracks of a temporary nature for the accommodation of their employees. The accommodations provided by these structures were stated to be very unsatisfactory. The houses were rented to the foremen at the mines, who often use the authority obtained from this fact to their own advantage. While the barrack type of building has largely disappeared, being replaced by smaller buildings with separate apartments, the power of letting them is still left to the foremen of the mines. These conditions have frequently led to strikes of the miners.

The hygienic conditions are described as not what they ought to be. The dwellings usually consist of bedrooms, a kitchen, and a dining room, though the latter is often absent. Subletting is the rule. Everything is sacrificed to the chance of putting in extra bedsteads. Two workmen usually sleep in each bed. The provisions for ventilation at night are very bad, the bedding very poor, and linen seldom clean, being changed but once a month. A place in a bed is rented at 7.50 or 10 pesetas (\$1.45 or \$1.93) per month, the higher priced bed being somewhat wider and better provided with bedding. On the other hand, much better conditions were found in the mines of Villanueva (Seville) during an investigation in 1904. In these mines the workmen lived in hovels before the employers provided housing accommodations for them. The mining company built special suburbs on an elevated situation, with wide and clean streets, well-ventilated houses, with large doors and windows, and small yards. Drinking water is free, and is transported on horseback to the houses in small casks at the expense of the company. The houses built are of two types; the smaller of two rooms rent for 3 pesetas (\$0.58) per month, the larger for 7.50 pesetas (\$1.45) per month.

The housing conditions of the tile makers in Madrid were investigated by the institute in 1904. They were found to live in small hovels, more fit for animals than for human beings. These hovels were about 1½ meters (59 inches) long and wide, and 1.60 meters (63 inches) high, contained only one room, and had no ventilation except through the door.

These three isolated examples are not sufficient to draw any general conclusions as to the housing conditions of the working classes. In 1906 the third ("technical administrative") section of the Institute of Social Reforms undertook a general inquiry into the housing conditions, by means of correspondence; but while the answers cover a larger part of the Kingdom, the inquiry was not comprehensive enough to give more than a very general idea of the situation. Ac-

According to statements of public officials, the housing conditions of workingmen were good in 56 localities out of 221 reporting, or 25.34 per cent; they were fair in 21 localities, or 9.5 per cent; bad in 41 localities, or 18.55 per cent; they needed improvement in 49 localities, or 22.17 per cent; in 12 localities, or 5.42 per cent, the employees mostly owned the dwellings they lived in; in 9, or 4.07 per cent, suburbs were especially constructed for workmen; in 3 localities, or 1.36 per cent, the employers provided their wage-earners with housing facilities free; societies for construction of dwellings and their sale to workingmen under favorable conditions existed in 13 localities, or 5.88 per cent; and in 10 localities, or 4.52 per cent, the local authorities were considering plans for construction of workingmen's houses to be conveyed to wage-workers on favorable conditions.

Many efforts have been made in Spain by the Government toward a more active participation of public authority in the improvement of housing conditions during the last 30 years, and these are reviewed in the report; among the results actually accomplished the most important was the enactment of a law in 1877 conferring tax exemption and other privileges upon the society *La Constructora Benéfica*, an organization for the construction of workingmen's dwellings, and the investigation of housing conditions by the commission of 1884.

The description of the private social efforts toward stimulating ownership of homes among the working classes claims a chapter in this part of the report. The results of these private efforts are very meager. The most important organizations in this class are *La Constructora Benéfica*, above mentioned, *La Compañía Madrileña de Urbanización*, and a few others, mostly operating in Madrid, but the scope of the activity of most of these is very limited. A few trade-union pension funds and mutual credit associations, such as *Caja de Ahorros de los Empleados de Ferrocarriles* and the *Montepío General Obrero de España*, are permitted to invest their funds in loans for the construction of dwellings by their members.

The third part of the report contains a detailed discussion of the principles upon which a law for improvements of housing conditions among working classes must be based in Spain; this part contains all the conclusions of the economic section of the institute, while the first two parts are simply a careful compilation of information available.

In the opinion of the section the housing problem in Spain may not be so acute as in some other European countries, mainly because of the milder climatic conditions; nevertheless it is growing in importance because of the same factors which have created the housing problem in other countries, namely, the development of industry and the growth of urban centers at the expense of the rural population. The private and social efforts toward improving the housing condi-

tions of the working classes, few as they are, are evidence that such improvement is recognized by public opinion as a social need. Without discussing the problem of the intervention of the State from a theoretical point of view, the section points out that such intervention in some form is indicated by the study of the proceedings of the international housing congresses and foreign legislation, and is supported by a large variety of social, hygienic, and economic reasons.

While very little has as yet been accomplished in Spain in the line of state intervention, proposals for such intervention have been frequently made, and the Spanish law contains no principle which would interfere with such intervention. On the contrary, the accident-compensation act and similar legislation is quoted as constituting important precedents of the power of the State to intervene in the solution of important social problems. Such state intervention must not reduce itself to a mere grant of fiscal privileges or of financial subsidies. It must be well planned and of educational value, and must cooperate with existing private efforts. The principal objects of such intervention should be, first, to regulate social efforts, and, second, to stimulate, develop, and extend such social action. To reach these aims the State may promote the organization of societies in which should be represented various social elements; it also must provide the means to enable the societies to exercise this activity.

In the opinion of the section, a law for the improvement of housing conditions among wage-earners and small-salaried employees must be based upon the following principles: (1) The creation of an educational institution charged with the duty of stimulating the growth of cheap and hygienic dwellings and directing social efforts toward the same end, harmonizing these social efforts with those of the State. In this institution all social elements interested in the problem should be represented. (2) The determination of the ways and means by which the State can encourage private social efforts. (3) The intervention of the municipal authorities in the improvement of neighborhoods inhabited mainly by working people. (4) Determination of the guaranties which the builders of cheap dwellings must offer and the economic and hygienic conditions which these dwellings must satisfy. (5) The establishment of the legal regulations which would insure the proper working of the law by maintaining the ownership of the buildings and preventing the loss of such ownership by the family in case of death of the proprietor.

In elaboration of these general principles, the section recommends the establishment of local housing committees (*juntas*), following the Belgian example. The functions of these local committees are briefly stated as follows: General encouragement of building of workingmen's dwellings, by aiding the formation of private charitable or cooperative societies for that purpose and helping them in obtaining

the necessary credit, by offering suggestions to the public authorities, and by other similar methods; general educational activity in this field by prize competitions; the study of housing conditions, etc.

According to the recommendations of the section, the establishment of such committees should rest with the Government. In order to represent all interested social elements, they should include representatives of the municipal government, of the property-owning classes, and of working classes. There should also be on these committees members of the medical and architectural professions, who possess the technical knowledge required. To be of any positive influence, the committees must be granted all rights of legal persons, such as to hold property and to receive donations and legacies and subsidies and appropriations from the State, the provinces, and the municipalities. It would be useless to establish these committees without providing them with the necessary funds for expenses; and the municipalities should provide them with a moderate appropriation to cover the necessary cost of administration, such as rent, office expenditures, and the remuneration of the secretary. The general administrative supervision of these committees should be lodged in the Institute of Social Reforms.

In addition to the establishment of these "juntas," the report recommends a more direct state intervention for the encouragement of the construction of cheap dwellings. Such intervention may avail itself of the following three methods: (1) Stimulation of building by tax exemptions, (2) promotion of private and social efforts by means of financial assistance, (3) encouragement of private capital.

Tax exemptions are freely used for similar purposes in the other European countries, and there are many precedents for their use in Spain. To be efficacious, such exemptions must be ample and generous. A total exemption from taxation for 20 years for buildings complying with the requirements of the law and exemption from the inheritance tax, when the house passes over to direct heirs and there is no other real estate in the legacy, are suggested.

In addition to such privilege as tax exemptions present the report considers direct financial subsidies especially necessary in Spain, either in definite amounts of money or in grants of land—since as compared with other countries, building societies are almost unknown in Spain, and their formation must be encouraged. Building societies should be subsidized in the following order of preference: (1) Cooperative societies consisting of wage-earners and salaried employees, (2) charitable societies, endowed with donations and legacies, and (3) other building societies which seek the benefits conferred by the law. There should be a legal limit to such subsidies in proportion to the original capital investments of the societies. Subsidies may also be granted to municipalities for the construction of cheap

dwellings. The report follows the precedents established by the Belgian, French, and Italian laws, in recommending that savings banks be permitted to invest a certain part of their assets, under strict guarantees, in loans to societies for the construction of cheap dwellings or in the direct construction of such dwellings for sale or lease. Furthermore, an introduction of a method of combining insurance with the sale of cheap dwellings, following the Belgian example, is considered very desirable, in order to secure to the family the possession of the home in case of the death of the breadwinner. for the fear of such death with the consequent inability to meet the recurrent payments, often deters a workingman's family from purchasing a home.

The form of insurance recommended is called in the report "*seguro mixto*," and is practically an endowment insurance for the amount of the loan made in order to purchase the house. The endowment insurance matures at the same time as the loan. In case of death the loan is liquidated immediately by the value of the policy. The purchaser of the house pays insurance premiums on the policy instead of installments and interest on the loan. The section did not think itself justified, however, to urge the introduction of this measure, for the reason that the Instituto Nacional de Previsión (National Insurance Institute) recommended by the Institute of Social Reforms was not yet established, and there was no institution which could be charged with the administration of this new form of popular insurance.^a)

The question of the relation of the municipalities to the housing problem is next taken up. The municipalities are most closely concerned in this problem, and they can influence it in two ways—by control and inspection of workmen's dwellings, a municipal function delegated to it by the authority of the State, and by direct encouragement or intervention in the construction of cheap dwellings with a possibility of municipalization of such dwellings. After a brief review of foreign legislation pertaining to this problem, the section arrived at the following conclusions: There should be effective cooperation between the municipalities and the local housing committees to be established. The committees would be best qualified to control the proper inspection and enforcement of sanitary laws by systematic investigation of conditions; they would also formulate the plans for municipal activity. The necessary means for carrying out these plans might be obtained from state subsidies, from the sale of old materials, from special taxes, approved by the State, from the sale

^a Since the report was published the National Insurance Institute was established by the law of February 27, 1908, and subsequently this insurance scheme was included in the draft of the proposed housing law.

of municipal real estate, and from rentals of buildings owned by the municipalities.

These are the main principles upon which a law for the encouragement of cheap dwellings should be based in the opinion of the first (economic) section of the Institute of Social Reforms; and these were all embodied in the draft of the law as approved by the institute as a whole.

The report closes with several appendixes containing the following documentary material: (1) Text of proposed Spanish laws for the encouragement of workingmen's dwellings introduced in the Chamber of Deputies in 1878, and in the Senate in 1906 (10 pages); (2) constitutions, by-laws, and regulations of the principal Spanish societies for the improvement of housing conditions (70 pages); (3) Spanish translations of the most important European laws for the improvement of housing conditions (56 pages), and (4) a comprehensive bibliography (34 pages).

DECISIONS OF COURTS AFFECTING LABOR.

[Except in cases of special interest, the decisions here presented are restricted to those rendered by the Federal courts and the higher courts of the States and Territories. Only material portions of such decisions are reproduced, introductory and explanatory matter being given in the words of the editor. Decisions under statute law are indexed under the proper headings in the cumulative index, page 195.]

DECISIONS UNDER STATUTE LAW.

BOYCOTT—INJUNCTION—CONTEMPT—EVIDENCE—*The Buck Stove and Range Company v. The American Federation of Labor, Supreme Court of the District of Columbia, 36 Washington Law Reporter, page 822.*—The corporation named had secured an injunction against the officers and members of the American Federation of Labor to prohibit the publication of the corporation as “unfair” or otherwise boycotting or interfering with its business. (See 35 Washington Law Reporter, p. 797; Bulletin No. 74, p. 246.) The case came before the court at this time on a rule against certain defendants to show cause why they should not be punished for contempt as having violated the injunctive order. These defendants were Samuel Gompers, president, and Frank Morrison, secretary, of the American Federation of Labor, and John Mitchell, a vice-president and member of the executive council of the Federation, and up to April, 1908, president of the United Mine Workers of America. These defendants were found guilty of contempt as charged and were sentenced accordingly.

The opinion of the court was delivered by Judge Wright, who reviewed at length the conditions antecedent to the injunction, the announced attitude of the defendants toward it during and after the hearing on the subject, and their subsequent actions. Documents and quotations from published articles as well as parts of the evidence are reproduced, showing quite fully the condition of the case from its beginning until the time of the trial. Judge Wright spoke in part as follows:

Plaintiff was a member of an association of stove manufacturers, called The Stove Founders' National Defense Association. There existed an agreement of long standing between the Stove Founders' National Defense Association and the Metal Polishers, Buffers, Platers, Brass Molders, and Brass and Silver Workers' International Union of North America providing for the settlement of all disputes between a member of the Stove Founders' National Defense Association and a member of the union by a conference committee, and

that the decision should be binding upon each party for a term of twelve months, and providing further "that pending the adjudication by the presidents and conference committee, neither party to the dispute shall discontinue operations, but shall proceed with business in the ordinary manner." Many grievances have been adjusted under this agreement, its provisions having been faithfully observed and kept by the Stove Founders' National Defense Association, and by the plaintiff as a member.

The thirty-six metal polishers in the employ of the plaintiff were "pieceworkers;" that is, they were paid by the piece, and earned from \$4.00 to \$5.25 per day, according to their individual skill and the number of hours worked.

In November, 1905, it first came to the attention of J. W. Van Cleave, president of the plaintiff, that metal polishers were leaving their work before quitting time, some of them as early as an hour and a half before, at whatever time they happened to finish a job. Shortly afterward the works were closed down for annual repairs and inventory, and upon the day of closing the president, Van Cleave, called together all polishers in the polishing department and addressed them thus: "I called their attention to what had come to my notice, and told them that we would not permit that; that our shop was then and always had been running ten hours; that all of our machinery ran ten hours; and that I called them there for the purpose of informing them that when we started up in the beginning of 1906, that every department would have to work, and every man in every department would have to work ten hours.

"I also called their attention to the fact that it had been reported to me that the Polishers' Union had put on a wage limit; that is to say, the amount per day that each man should earn and then quit work. I told them that if that was true, and that the men were submitting to that, that that was robbing their own wives and children, and that we would not submit to it; that God had never made any two men with the same ability, and, therefore, each man must earn all he could in the shop, doing all the work he could, and, it being piecework, he would thereby earn more or less, according to his ability.

"I told these men also, that if they were not satisfied with our rules and our shop conditions, that I would give them six days' notice three weeks before we opened shop in 1906, in order that they might get other places if they wanted to; but, if they returned to work they would have to return under the rules of our shop, and not under any rules that they might make."

Upon the reopening of the works in January, 1906, notices were posted in its polishing department by the plaintiff that all its employees were required to work ten hours a day during the year 1906. All of these men returned to work, accepted their old places and worked continuously ten hours a day until August 27th, earning large wages.

On this date the men struck, picketing being subsequently provided for, until at length a conference between the president of the company and committee from the unions was arranged for.

A stenographic report of this conference, spreading over nine typewritten pages, is appended to this opinion; its significance is to show that before these three labor unions endorsed the boycott that they knew that the metal polishers had never secured the nine-hour day, and were informed of the falsity of its position; that they understood that the thirty-six metal polishers had violated the shop rules and broken the agreement with the Defense Association; and its further significance is to tie the International Iron Molders' Union of North America to the distortion appearing in its statement of grievances laid before the executive council of the American Federation of Labor as a basis for its endorsement of the boycott, and signed by this same Bechtold himself as its secretary and treasurer, as follows:

"About August 1st, 1906, the Buck's Stove and Range Company attempted to force the metal polishers to resume the ten-hour workday, after enjoying the nine-hour workday for a period of eighteen months, and are still making every effort within their power to adjust their grievance. Mr. J. W. Van Cleave, president of the Citizens' Industrial Alliance, also president of the Manufacturers' Association, enjoys a reputation equal to that of Parry and Post. He is president of the Buck's Stove and Range Company, and absolutely refused to deal with a committee composed of David Kreyling, business agent of the Central Trades and Labor Union of St. Louis, Edward Lucas, a member of the Metal Polishers', and myself, stating that he was a member of the Founders' National Defense Association, and that his association acted for him in such matters."

The boycott was endorsed by each of these three unions shortly after this conference.

No question is made about the truth of any of the foregoing. No evidence was offered by the defendants in gainsay or in contradiction. Manifestly, no boycott based on such a foundation could ever hope for even the toleration, much less the support, of the friends of organized labor or even the mass of labor men themselves, as seems to have been foreseen by the promoters of this particular enterprise; for the thousands of circulars distributed amongst the public and the customers of the plaintiff generally, stated a case of deceit and falsity, a case that had no existence and never had had.

Then follows an account of the publication of various circulars and notices and of the cooperation of various affiliated organizations, including that of the American Federation by its committees and officers and through the columns of the organ of the Federation, the American Federationist. The methods and effectiveness of the boycott were fully shown, and the court, continuing, said:

Such is a meager portrayal of the status at the time of the preliminary injunction; such the procession of evils which it sought to reach and to arrest awhile, until the merits of the controversy could be judicially ascertained, according to due process of the law of the land; its sketching though tedious and laborious has seemed essential here, in order to an understanding of the relationship which the doings and contrivances of the respondents subsequent to the injunction, bear to the execution of the preestablished interdiction and the uninterrupted consummation of its ends.

Prior to the enactment of the "Sherman Act," by the Congress of the United States, it was at common law a crime for two or more persons to combine for the purpose of consummating an unlawful act, whether that unlawful act was the ultimate object of the combination or whether the unlawful act was but a step to the achievement of an ultimate lawful design; were an unlawful act anywhere projected in the agreement the crime was complete in the mere agreement itself, although no steps were ever taken toward its execution and although its ultimate purpose was good. That an individual should pay his debts was commendable; but an agreement to attain that desirable end through the method of beating him over the head, was a crime; and yet "unlawful acts," are not only those which are so grievously unlawful as to be public crimes; a violation of any civil right of another is none the less "unlawful" because it happens to be less than a crime.

When persons enter into a "contract" their status with respect to each other and the balance of mankind is straightway altered; each is vested with rights which he did not have before, in that each is entitled from the other to the performance of the obligations of that contract; the right to the performance of these obligations the balance of mankind are required to respect; not even the lawmaking power of all the States of the Union severally assembled is potent to deprive either by even a jot or tittle and with these obligations can not interfere; for in the Constitution is it written, "No State shall * * * pass any law impairing the obligation of contracts." When came labor unions to be of greater power and majesty than these? The breach of a contract by a party to it being "unlawful" (not unlawful in the sense of criminality, but unlawful in the sense of a violation of the "civil" right to its performance), the act of a third person in persuading him into the breach is equally "unlawful;" and if a combination of two or more persons contemplates the breach of a contract through even the persuasion of a party to the contract, the combination comprises an "unlawful act" and the combination alone and in itself is a common law crime.

Second. A business, be it mercantile, manufacturing or other, which has for a long time been successfully operated and developed possesses a greater value than a like business newly launched, although the latter be exactly equivalent in respect of stock, equipment, moneys and all other physical possessions; the basis of the excess in value of the one over the other is termed the "good will;" it is the advantage which exists in established trade relations with not only habitual customers but with the trading public generally; the advantages of an established public repute for punctuality in dealing, or superior excellence of goods or product; finally, in last analysis, a "good will," when it exists is one return for the expenditure of time, money, energy, and effort, in development; it is a thing of value in the sense that it is a subject of bargain and sale; oftentimes of a value which exceeds that of all physical assets taken together; in that it may possess exchange value, it may be "property;" when it does possess "exchange value," property it is; and a combination for the purpose of destroying it is for an "unlawful act," whether you call the combination a "labor union" or a "trust." There is no room here for

confusion with cases of business competition between individuals, or individual firms; competition gives to the public the advantage of choice, and thereby conduces to the public advantage by stimulating a betterment of product; elimination either promotes monopoly or drives utterly from the markets and from the reach of the public a product which perchance may be generally necessary or universally desired; these ends an individual single handed is impotent to achieve, but a combination if sufficiently far-reaching may bring them readily to pass; therein is the combination unlawful, while the single-handed project of an individual is not.

Third. Congress has seen fit to enact (1 Sup., 762):

"An act to protect trade and commerce against unlawful restraints and monopolies.

"SEC. 1. Every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal.

"Every person who shall make any such contract or engage in any such combination or conspiracy shall be deemed guilty of a misdemeanor, and, on conviction thereof shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments in the discretion of the court."

The plaintiff's trade was "among the several States;" its product an article of "commerce" among them; the confederation of the various defendants was a "conspiracy" in restraint of both (*Loewe v. Lawlor*, 205 U. S. 274), although if fault with that word is found, it may be laid aside and "combination" substituted; for respecting the case here it is all one.

From the foregoing it ought to seem apparent to thoughtful men that the defendants to the bill, each and all of them, have combined together for the purposes of—

1. Bringing about the breach of plaintiff's existing contracts with others;

2. Depriving plaintiff of property (the value of the good will of its business) without due process of law;

3. Restraining trade among the several States;

4. Restraining commerce among the several States.

And if either conclusion 1 or 2 is accurate, are guilty of the common law crime, "conspiracy;" if either conclusion 3 or 4 is accurate, guilty of the crime defined by the statute; there is, in my judgment, no escape from either conclusion of the four; under either aspect of the matter their ultimate purpose is unlawful, their concerted project an offense against the law, and they are guilty of crime.

It was to stay the unlawful impairment of the plaintiff's contracts; stay the destruction of the value of its business "good will;" stay the restraint of trade among the several States; stay the restraint of commerce among them and preserve an existing status until the case could finally be heard, that the injunction was designed; in so far as the devices and instrumentalities employed by the plot were numerous and elaborate, the plot itself was responsible for the extent to which the injunction must proceed to those details if it would reach plot and plotters.

Then follows the injunction order, a part of which is reproduced in Bulletin No. 74, p. 254.

That Gompers and others had in advance of the injunction determined to violate it if issued, and had in advance of the injunction counseled all members of labor unions and of the American Federation of Labor and the public generally to violate it in case it should be issued, appears from the following, which references point out also the general plan and mutual understanding of the organizations and their various members:

Extract from Report of the Proceedings of the Convention of the American Federation of Labor, 1906, page 14:

"Report of Samuel Gompers, president.

"CITY CENTRAL BODIES—THEIR IMPORTANCE AND DUTY.

"* * * Our international trade unions and the American Federation of Labor are dependent upon local central bodies to carry out the program or policy decreed by the general labor movement. * * * but the practical assistance they can and do render the labor movement in executing the plans devised for the protection and promotion of the interests and rights of the toiling masses is incalculable. They are not only the local municipal council of industry dealing with sociological problems, but they are also the concrete power to enforce and execute within the jurisdiction of their existence the judgment of the highest court in the realms of labor of America, the American Federation of Labor. * * *

"When, however, the final word has been spoken by the court of last resort of labor, composed of the representatives of the intelligent organized wage-earners of America, to these at least conformity by our central bodies is essential to the safety and the well-being of the labor movement. * * *"

In his report as president, to the 1907 convention of the American Federation of Labor, he stated:

"In the meantime we should proceed as we have of old, and wherever a court shall issue an injunction restraining any of our fellow-workers from placing a concern hostile to labor's interest on our unfair list; enjoining the workers from issuing notices of this character, the further suggestion is made that upon any letter or circular issued upon a matter of this character, after stating the name of the unfair firm and the grievance complained of, the words 'We have been enjoined by the courts from boycotting this concern' could be added with advantage."

And when on the stand as a witness in this cause, on January 30, 1908, his attention was called to that portion of his report, he replied in respect to it:

"Q. Have you ever recalled that suggestion?

"A. No, sir; I would rather reaffirm it."

In the November, 1902, number of the Federationist, in its editorial columns, he printed and published:

"We beg to say plainly and distinctly to Mr. Merritt and fellow-sympathizers that the American Federation of Labor will never abandon the boycott, and that the threats against the Federation are idle, impotent and impudent."

A day or two after the filing of the bill herein he publicly stated in an interview with three representatives of prominent newspapers:

"When it comes to a choice between surrendering my rights as a free American citizen or violating the injunction of the courts, I do not hesitate to say that I shall exercise my rights as between the two."

On September 5, 1907, at the Jamestown Exposition, in the course of a Labor Day speech, delivered as a public address, he said:

"An injunction is now being sought from the supreme court of the District of Columbia against myself and my colleagues of the executive council of the American Federation of Labor. It seeks to enjoin us from doing perfectly lawful acts; to deprive us of our lawful and constitutional rights. So far as I am concerned, let me say that never have I, nor ever will I, violate a law. I desire it to be clearly understood that when any court undertakes without warrant of law by the injunction process to deprive me of my personal rights and my personal liberty guaranteed by the Constitution, I shall have no hesitancy in asserting and exercising those rights."

In the October, 1907, issue of the Federationist he published the same at length in the editorial columns, and in the same columns of the same number stated:

"So long as the right of free speech and free press obtains, we shall publish the truth in regard to all matters. If any person or association challenges the accuracy of any of our statements, we are willing to meet him or them in the courts and defend ourselves. So long as we do not print anything which is libelous and seditious, we propose to maintain our rights and exercise liberty of speech and liberty of the press. If for any reason, at any time, the name of the Buck's Stove and Range Company does not appear upon the 'We Don't Patronize' list of the American Federationist (unless that company becomes fair in its dealings toward labor), all will understand that the right of free speech and free press are denied us; but even then this will not deprive us, or our fellow-workmen and those who sympathize with our cause, from exercising their lawful right and privilege of withholding their patronage from the Van Cleave Company—The Buck's Stove and Range Company of St. Louis.

"So far as we are personally and officially concerned, we have fully stated our position in the American Federationist and elsewhere.

"Do not fail to keep the Buck's Stove and Range Company of St. Louis in mind and remember that it is on the unfair list of organized labor of America."

In a column in the same issue headed "Editorial Notes," he used the following language:

"So labor must not use its patronage as it will—that is, if Van Cleave of Buck's Stove and Range Company fame has his way. But what vested right has that company in the patronage of labor or of labor's friends? It is their own to withhold or bestow as their interest or fancy may direct.

"They have a lawful right to do as they wish, all the Van Cleave, all the injunctions, all the fool or vicious opponents to the contrary notwithstanding.

"Wonder whether Van Cleave will try for an injunction compelling union men and their friends to buy the Buck's Stove and Range Company's unfair product?

"Until a law is passed making it compulsory upon labor men to buy Van Cleave's stoves we need not buy them, we won't buy them and we will persuade other fair-minded, sympathetic friends to cooperate with us and leave the blamed things alone.

"Go to ——— with your injunctions."

(He has taken an oath in this case here, that he did not mean "Go to hell with your injunctions.")

"The Buck's Stove and Range Company of St. Louis (of which Mr. Van Cleave is president) will continue to be regarded and treated as unfair until it comes to an honorable agreement with organized labor. And this, too, whether or not it appears on the 'We Don't Patronize' list."

After the motion for the injunction had been heard and submitted to the court, and pending its decision there were prepared, published and despatched to each secretary of the 25,000 or 30,000 unions an "Urgent Appeal" for funds, accompanied by a circular letter signed by Gompers and Morrison as "president" and "secretary" respectively, which contained:

"The court will soon give a decision on the legal issue which has been raised. We shall continue to maintain that we have the right to publish the name of the Buck's Stove & Range Company upon the 'We Don't Patronize' list. Should we be enjoined by the court from doing so, the merits of the case will not be altered nor can any court decision take from any man the right to bestow his patronage where he pleases.

"Bear in mind that you have a right to decide how your money shall be expended.

"You may or may not buy the products of The Buck's Stove & Range Company.

"There is no law or edict of court that can compel you to buy a Buck's stove or range.

"You can not be prohibited from informing your friends and sympathizers of the reason why you exercise this right. You have also the right to inform business men handling the Buck's Stove & Range Company's products of its unfair attitude toward its employees and ask them to give their sympathy and aid in influencing the Buck's Stove & Range Company to deal fairly with its employees and come to an honorable agreement with the union primarily at interest.

"It would be well for you as central bodies, local unions and individual members of organized labor and sympathizers to call on business men in your respective localities, urge their sympathetic cooperation and ask them to write to the The Buck's Stove & Range Company of St. Louis, urging it to make an honorable adjustment of its relations with organized labor. Act energetically and act at once. Report the result of your effort to the undersigned."

SINCE THE INJUNCTION.

Having in mind what may be in the foregoing delineation which indicates that either of the three respondents did before the issuance of the injunction deliberately determine to willfully violate it and did counsel others to do the same, let me now turn to their sayings and doings since the decision of Mr. Justice Gould was formally announced, and the order of injunction itself put into technical opera-

tion by the giving of the injunction bond. On December 17, 1907, the opinion of the court was filed in the case; the order of injunction was entered on December 18th; the giving of the undertaking required by it was consummated on December 23rd, and I am disposed now to look at the separate conduct of each respondent with a view of recording his individual responsibility in sufficient detail.

GOMPERS.

He testified that the January number of the American Federationist, edited by him as president of the American Federation of Labor, still contained the name of the plaintiff upon its "Unfair List," and contained also the following:

"A limited number of the American Federationist for 1907, bound in two volumes, may be had on application to this office. The 1907 volumes are bound in the same style as the preceding years.

"The official printed proceedings of the Norfolk convention of the A. F. of L. are now ready and can be had upon application by mail, 25 cents per single copy, \$20 per hundred. Postage prepaid by the A. F. of L."

"The said proceedings of the Norfolk convention contain, at page 91, the name of petitioner as being on the 'Unfair' list of the American Federation of Labor."

He testifies that more than 10,000 copies were hurriedly printed in Washington:

"Q. When were they received?

"A. About December 20th or 21st.

"Q. That is, they were received from the printer about December 20th or 21st?

"A. About that; I am not sure as to the date, but I made it a special purpose to get it out a day or two earlier, and if that is the purpose of your question, I will tell you.

"Q. What is it?

"A. It was to issue the American Federationist before the undertaking had been made, so as to make the injunction of Justice Gould effective.

"Q. You knew at the time the order had been made?

"A. Yes, sir. . . .

"Q. Were these 10,000 copies distributed?

"A. Yes, sir.

"Q. From the office?

"A. Yes, sir.

"Q. In what way?

"A. Through the mails, through carriers, through direct purchases. . . .

"Q. Have you unions in California?

"A. Affiliated?

"Q. Yes.

"A. We have local unions affiliated to international unions.

"Q. Yes; and to whom these were sent?

"A. Yes, sir; but I suppose they were in transit.

"Q. That they would be in transit on the 23d?

"A. More than likely, sir. I did not give it a thought, but I suppose so now you ask me the question. I never gave it a thought. . . .

"Q. At the time you sent these out through the mails you supposed they would be in transit?"

"A. I did not suppose anything of the kind. I did not give the matter a thought as to whether it was California, or Kalamazoo, or the District of Columbia."

In this he overreached himself; for the mails were his agents, chosen by him as the medium for delivery to distant points; and if, after the injunction became operative he violated it through the instrumentality of his own hands or through the instrumentality of another medium of his own preference, is all one. Had he carried the copies to California himself, what difference from sending another with his errand?

In the February number of the 1908 American Federationist he published over his own name a lengthy editorial concerning the order, which amongst other things stated:

"With all due respect to the court, it is impossible for us to see how we can comply with all the terms of this injunction," and further stated there:

"This injunction cannot compel union men or their friends to buy the Buck's stoves and ranges. For this reason, the injunction will fail to bolster up the business of this firm, which it claims is so swiftly declining.

"Individuals, as members of organized labor, will still exercise the right to buy or not to buy the Buck's stoves and ranges. It is an exemplification of the saying that 'You can lead a horse to water, but you can't make him drink,' and more than likely these men of organized labor and their friends will continue to exercise their right to purchase or not purchase the Buck's stoves and ranges."

On other pages of the same issue of the American Federationist he published the order itself at length prefacing it by a heading printed in larger type of which the following is a facsimile, as far as the quotation goes:

"ORDER GRANTING INJUNCTION.

"In the official organ of the National Association of Manufacturers, one of the counsel for the Buck's Stove and Range Company declares that punishment for violation of the injunction issued by Justice Gould, against the American Federation of Labor, applies particularly to those within the territorial limits of the District of Columbia who violate the terms of the injunction. That those who violate the terms of the injunction in any other part of the country outside of the District of Columbia can be punished only when they thereafter come within the territorial limits of the District of Columbia. Counsel for the American Federation of Labor assure us that this construction of the court's order is accurate."

THE INJUNCTION—BUCK'S STOVE AND RANGE CO. VS. AMERICAN FEDERATION OF LABOR.

"This cause coming on to be heard upon the petition of the complainant for an injunction pendente lite as prayed in the bill, and the defendant's return to the rule to show cause issued upon the said petition, having been argued by the solicitors for the respective parties, and duly considered, it is, thereupon by the court, this 18th day of

December, A. D. 1907, ordered of the defendant or any of them, their agents, servants, attorneys, confederates, or other person or persons acting in aid of or in conjunction with them or which contains any reference to the complainant, its business or product in connection with the term 'Unfair' or with the 'We Don't Patronize' list, or with any other phrase, word or words of similar import, and from publishing or * * *."

The evidence is so suggestful of a finding by the court that this was for the purpose of inducing persons beyond the District of Columbia to violate the injunction and for the purpose of defeating it, that that finding is now made.

In the March, 1908, number of the American Federationist he published in the editorial columns this:

"It should be borne in mind that there is no law, aye, not even a court decision, compelling union men or their friends of labor to buy a Buck's stove or range. No, not even to buy a Loewe hat."

In the April, 1908, number this:

"The temporary injunction issued by Justice Gould, of the court of equity, of the District of Columbia, in the (Van Cleave) Buck's Stove and Range Company of St. Louis against the American Federation of Labor, its officers and all others, has been made permanent. The case will now be carried to the court of appeals of the District of Columbia.

"It should be borne in mind that there is no law, aye, not even a court decision; compelling union men or their friends of labor to buy a Buck's stove or range. No, not even to buy a Loewe hat."

And in another column of that issue, this:

"Bear in mind that an injunction issued by a court in no way compels labor or labor's friends to buy the product of the Van Cleave Buck's Stove and Range Company of St. Louis.

"Fellow workers, be true and helpful to yourselves and to each other. Remember that united effort in cause of right and just must triumph."

Other quotations from addresses and published matter are reproduced, and Judge Wright said:

The court finds from the evidence that all of which was said, all of which was done, all of which was published, all of which was circulated in willful disobedience and deliberate violation of the injunction, and for the purpose of inciting and accomplishing the violation generally, and in pursuance of the original common design of himself and confederates, to

1. Bring about the breach of plaintiff's existing contracts with others;
2. Deprive plaintiff of property (the good will of its business) without due process of law;
3. Restrain trade among the several States;
4. Restrain commerce among the several States.

Since the filing of these very charges in contempt against him, in the September, 1908, Federationist, Gompers published:

"* * * Money makes the mare go, and Mr. Van Cleave's money is making this contempt case go. * * * But labor will rise in its might and crush Mr. Van Cleave and all his money that may work

now or in the future for restricting labor in its fundamental rights of free speech and free press."

In that same number was the following in editorial:

"We have also witnessed in the past year most serious judicial invasion and usurpation of individual liberty and human freedom by the abuse of the writ of injunction.

"* * * An attempt has been made by the abuse of the writ of injunction to deny and prohibit the freedom of speech and the freedom of the press; and men have been cited to show cause why they should not be punished purely for the right of free press and free speech—rights not only natural and inherent in themselves, but guaranteed by the Constitution of our country, and which our forefathers fought to save, and which a free people never dreamed would ever be placed in jeopardy."

And in a public address in Indianapolis on September 29, 1908, said:

"* * * I want to say this to you and to all that it may concern, that so long as I retain my health and my sanity I am going to speak upon any subject on God's green earth, and as a citizen of this country and as editor of the American Federationist, the official monthly magazine of the American Federation of Labor, so long as I am endorsed by the labor of the United States with the performance of duties of that office, I will discuss every subject which forms itself to my judgment as being just and right. * * * The injunction which Judge Taft issued while upon the bench is now the basis for the injunction against the American Federation of Labor and its officers and the great rank and file of the labor organizations of the country, just as in issuing the injunction of the Buck Stove & Range Co. quoted Judge Taft injunction in support of his, Judge Gould's position. Do you know that about two weeks ago John Mitchell, Frank Morrison, and I were three of us haled to court to show cause why we should not be punished, why we should not be sent to jail for contempt of court. * * * I want to say to you that if the injunction is strictly construed and enforced, I am in contempt of court again for telling you that, but I propose to discuss this thing, and I do not want to be in contempt of court, but I propose to discuss it. The injunction prohibits me from mentioning the above stove and range company in this case to anybody, either by word of mouth or by letter, or either in letter or circular or any way, but I can't help that. I must discuss it."

MORRISON.

Frank Morrison is, and has been, secretary of the American Federation of Labor, stationed at its headquarters in Washington, and as such appeared and took part in the proceedings of the annual conventions of the American Federation of Labor.

With knowledge of its contents he aided in the preparation, circulation and distribution, prior to December 23, 1907, of the same copies of the January, 1908, number of the American Federationist that are hereinbefore specified against Gompers and with the same purpose and intent.

He signed and took part in the preparation of and dispatched to each secretary of the 25,000 to 30,000 unions, along with the "urgent

appeal," the circular letter hereinbefore specified against Gompers, with full knowledge of its contents and with the same purpose and intent.

He took part in the preparation, publication, circulation and distribution of the April, 1908, number of the American Federationist, with full knowledge of its contents as hereinbefore specified against Gompers and with the same purpose and intent.

With knowledge and approval of the other writings and speakings hereinbefore specified against Gompers he took part in the circulation and distribution in large numbers of each and every issue of the Federationist containing them, as hereinbefore specified against Gompers and with the same purpose and intent.

JOHN MITCHELL.

John Mitchell is and was one of the vice-presidents of the American Federation of Labor, one of the members of its executive council and until April, 1908, was president of the United Mine Workers of North America.

He signed with full knowledge of its contents the "urgent appeal," which accompanied the twenty-seven odd thousand circular letters to the various secretaries as hereinbefore specified against Gompers and Morrison; and with full knowledge of their contents, counseling their distribution; and with the same purpose and intent.

On the 25th of January, 1908, at the annual convention of the United Mine Workers of America, Mitchell, its president, being in the chair, the following resolution was passed:

"RESOLUTION NO. 73.

"Whereas, the Buck's Stove and Range Company, of St. Louis, Mo., have taken legal steps to prevent organized labor in general, and the officers and executive committee of the A. F. of L., in particular, from advertising the above-named firm as being on the 'Unfair' or 'We Don't Patronize List' and

"Whereas, by the issue of such an injunction or restraining order as prayed for by the above-named firm, organized labor will be deprived of one of its most effective weapons, and

"Whereas, J. W. Van Cleave, the president of above-named firm, also president of the National Manufacturers' Association, stated that in a few years' time he would disrupt organized labor; therefore, be it

"Resolved, That the U. M. W. of A., in nineteenth annual convention assembled, place the Buck's stoves and ranges on the unfair list, and any member of the U. M. W. of A. purchasing a stove of above make be fined \$5.00, and failing to pay the same be expelled from the organization."

Mitchell testifies:

"I cannot recall anything of the introduction of or passing of the resolution. By referring to the transcript of the record I see I was in the chair when the resolution was adopted.

"Q. But you have no independent recollection in regard to it?

"A. I have not."

We accept his statement that he has forgotten; but what of that? The fact that he undertook and discharged the duties of a presiding officer alone raises a presumption that he attended to the affairs of the assembly over which he was presiding; a presumption which no mere "non me recordo" is sufficiently weighty to overcome; moreover, the testimony of the others, the nature of the subject, the identity of the plaintiff and the then position of organized labor respecting it, and the publicity then given to the situation render it indubitable that Mitchell was fully conscious of the details of the resolution and willfully took part in its passage at the time.

On the 9th day of January, 1908, the resolution was printed in the United Mine Workers Journal, as Mitchell knew it would be, and by that organ alone disseminated amongst the 300,000 members of the association whose chief officer and head he was.

In defense of the charges now at bar, neither apology nor extenuation is deemed fit to be embraced; no claim of unmeant contumacy is heard; persisting in contemptuous violation of the order, no defense is offered save these.

That the injunction:

- "1. Infringed the constitutional guaranty of freedom of the press.
- "2. Infringed the constitutional guaranty of freedom of speech."

These defenses do not fill the measure of the case; the injunction was designed to stay the general conspiracy of which the publication of the "Unfair" and "We Don't Patronize" lists were but incidents; the injunction interferes with no legitimate right of criticism or comment that law has ever sanctioned and the respondents' intimation that it does so is a mockery and a pretense.

It is no more suspected by the observant that courts of equity enjoin the commission of mere threatened crimes, than they are suspected to hesitate in enjoining certain infractions of property rights although happening to be conceived or involved in crime; these infractions are limited to infractions of such a particular nature as that after their perpetration the law has no remedy adequate against their results.

Finding in the common law that not all writings, not all speakings are lawful, that some are unlawful, and looking about for the particular rule which is competent to distinguish the lawful from the unlawful I deduce it from all considerations to be this: Whatever in writing, print or speech violates a legal right of another, is unlawful; whether in itself alone it accommodates that result, or whether it be but one instrument in a concert tuned to that end. If such a writing, printing or speaking is unlawful, the rest is clear; it ought to be enjoined in advance, if either it alone, or the concert, so invades rights of property as that the law affords no remedy adequate to compensate for the results; nor would I yet be thought to consider that the process of injunction of right should go no further; that the inestimable advantage of a good name may not thus be rescued from preconceived despoilment; but of such questions when they come.

Counsel are heard claiming that no one needed to obey the order, although no reason is brought save those already looked at; no discussion of the technical distinction between "void" and "erroneous" orders was undertaken although invited, wherefore my conceptions

of this particular are destitute of the advantage to be had by considering the views of my brethren of the bar.

That the order was "void," according to the technical criteria by which the law determines "voidness" no one has shown me a pretense; yet under technical "voidness" alone, can parties escape the duty and the necessity of obedience; were it conceded "erroneous," in the sense that the tribunal had fallen into an error in the determination of a cause which it was invested with jurisdiction to "hear and determine," the duty and necessity of obedience remains nevertheless the same. And I place the decision of the matter at bar distinctly on the proposition, that were the order confessedly erroneous, yet it must have been obeyed. (*Worden v. Searls*, 121 U. S. 14.)

It is between the supremacy of law over the rabble or its prostration under the feet of the disordered throng.

The interpretation of the law of a matter by an appropriate judicial tribunal settles that matter between the parties; else there is not anywhere to be had a settlement which takes impartial account of both sides; even if it be said that tribunals now and then fall into error in particular matters, yet this error lies in the incomplete and finite nature of worldly things and should not overturn the rule; for the rule being the best attainable by finite man, holds better results for the social fabric, more promotes the general welfare than would any other rule; for any other rule would be not the best rule, but somewhat worse. It is to the end that errors so falling may be minimized by possible correction, that tribunals for review are established for the advantage of a party who has such claim to make; but meanwhile the decree fixes the law's seal upon the matter, there to remain until removed, if at all, in the manner of order; not by riotous hands.

It would seem not inappropriate for such a penalty as will serve to deter others from following after such outlawed examples; will serve physically to impose obedience even though late; will serve to vindicate the orderly power of judicial tribunals, and to establish over this litigation the supremacy of law.

COMBINATIONS TO FIX PRICES—RESTRAINT OF TRADE—POOLS AND TRUSTS—CONSTRUCTION AND APPLICATION OF STATUTE—*Rohlf v. Kasemeier et al.*, *Supreme Court of Iowa*, 118 *Northwestern Reporter*, page 276.—Dr. W. A. Rohlf, a practicing physician, was, with thirteen others of like profession, indicted for fixing fees and charges for medical and surgical services, in alleged violation of section 5060 of the Code of Iowa, which reads as follows:

Any corporation organized under the laws of this or any other State or country for transacting or conducting any kind of business in this State, or any partnership, association or individual, creating, entering into or becoming a member of, or party to any pool, trust, agreement, contract, combination, confederation or understanding with any other corporation, partnership, association, or individual, to regulate or fix the price of any article of merchandise or commodity, or to fix or limit the amount or quantity of any article, commodity, or merchandise to be manufactured, mined, produced, or sold in this State, shall be guilty of conspiracy.

Habeas corpus proceedings were instituted in the district court of Bremer County to secure the release of Rohlf from custody of the sheriff by whom he had been arrested and held, and his discharge was ordered. An appeal was taken to the supreme court, where the judgment of the court below was affirmed.

The case is of interest as discussing the principles governing combinations generally, including labor combinations, and their status where such laws as the above exist. The opinion of the court, which was delivered by Judge Deemer, is, excepting the preliminary statements, reproduced herewith:

The first point to be decided is: Do the acts charged constitute a crime under this section of the code? It will be noticed that it forbids a combination, agreement, or understanding to regulate or fix the price of any article of merchandise, or commodity, or of merchandise to be manufactured, mined, produced, or sold in this State. The primary inquiry is: Are the charges of a physician or surgeon for his medical skill or ability an article of merchandise or commodity to be produced or sold in this State. For appellant it is contended that the word "commodity" is broad enough to cover the charge made for professional services or skill, and that the trial court was in error in holding to the contrary. It must be remembered that the word is found in a criminal statute, and that in the interpretation of such statutes different rules apply from those which obtain in civil matters, or where contracts are involved. Nothing is to be added to such statutes by intendment, and, as a rule, they are to have a strict construction. Moreover, it is well settled that, in construing any statute, all the language shall be considered, and such interpretation placed upon any word appearing therein as was within the manifest intent of the body which enacted the law. Much of necessity depends upon the context and upon the usual and ordinary significance of the language used. Now, the word "commodity" is derived from the Latin "commodetas," and means primarily a convenience, profit, benefit, or advantage; but in referring to commerce it comprehends everything movable—that is, bought or sold—except animals. (See Webster's International Dictionary; *Best v. Bauder*, 29 How. Prac. (N. Y.) 489; *Barnett v. Powell*, 16 Ky. 409; *Queen Ins. Co. v. State*, 86 Tex. 250, 24 S. W. 397, 22 L. R. A. 483.) This word appearing in another statute (McClain's Code, § 5454) was held to cover insurance, and it was decided that a combination to fix insurance rates was illegal. (See *Beechley v. Mulville*, 102 Iowa, 602, 70 N. W. 107, 71 N. W. 428, 63 Am. St. Rep. 479.) But in that case the parties were not selling their own services. They were, as the opinion says, selling insurance, which was regarded as a commodity as used in the statute then under consideration. Here the indicted defendants were for a price giving their own services, or perhaps selling them, and the question is: Were these personal services a commodity?

As already indicated, the word must be taken in connection with the others used in the statute, and it is manifest that the commodity referred to must have been such as could be manufactured, mined, produced, or sold in the state, and the price was to be of an article or merchandise or commodity. If the contention of appellant be correct, the statute covers all kinds of personal labor, both skilled

and unskilled, under the term "commodity." Indeed, this is the broad claim made by counsel. Now, whilst there is a class of political economists who treat labor as so much merchandise, the wage being regulated simply by supply and demand, there is another class, which, taking account of the personal equation, sees in it something more than a commodity, and refuses to subscribe to the doctrine that supply and demand alone regulate the price. This latter class of economists refuses to accept the doctrine that a man is rich because he has stored away within him many days' work, and are convinced that his necessities, quite as often as the demand for his labor, fixes the stipend which he is to receive. In other words, the laborer, skilled or unskilled, is not regarded as standing on an equality with him who barter in goods and merchandise. It is not, of course, within the province of courts of justice to adopt or promulgate any particular system of political science; but in the interpretation of statutes they must take notice of current political theory and conviction. If we were to adopt the view so strongly presented by appellant's counsel, it would be on the assumption that the associated words "merchandise" and "commodity" include the wages to be paid for labor, because labor is a sort of merchandise, subject to barter and sale as other goods. A fundamental rule of construction is that, where particular words are followed by general ones, the general are restricted in meaning to objects of a like kind with those specified. (*State v. Stoller*, 38 Iowa, 321; *People v. Railroad*, 84 N. Y. 565; *McDade v. People*, 29 Mich. 50.) Now, the term "merchandise" is special rather than general, and has reference primarily to those things which merchants sell either at wholesale or retail. (*Jewell v. Board*, 113 Iowa, 47, 84 N. W. 973.) "Commodity" is a broader term, and, when used as in the statute now under consideration, means almost any description of article called movable or personal estate. (*Barnett v. Powell*, 16 Ky. 409; *Shuttleworth v. State*, 35 Ala. 415; *State v. Henke*, 19 Mo. 225.)

Used in connection with the term "merchandise," and qualified as it is in the latter part of the section of the words "manufactured, mined, produced, or sold," it is manifest that the statute was not intended to, and did not, include labor either skilled or unskilled. It must be remembered that the statute is a criminal one, and that such statutes must be strictly construed; and, in case of doubt, the construction must be adopted most favorable to the party charged. The only ground upon which appellant can stand with any show of plausibility is that labor is a commodity to be bought, sold, or produced as merchandise. This is a strained and unnatural construction, and gives to the word "commodity" a meaning which is perhaps permissible, but is not the commonly accepted one. Under our statutes, words and phrases are to be construed according to the context and the approved usage of the language. (Code, §48.) With this in mind, we are constrained to hold that labor is not a commodity within the meaning of the act now in question. As supporting this conclusion, see *Hunt v. Riverside Club*, 140 Mich. 538, 104 N. W. 40, 12 Detroit Leg. N. 264; *Queen v. State*, 86 Tex. 250, 24 S. W. 397, 22 L. R. A. 483. It seems to be the almost universal holding that it is no crime for any number of persons without an unlawful object in view to associate themselves together, and agree that they will not

work for or deal with certain classes of men, or work under a certain price or without certain conditions. (*Carew v. Rutherford*, 106 Mass. 14, 8 Am. Rep. 287; *Commonwealth v. Hunt*, 4 Metc. 134, 38 Am. Dec. 346; *Rogers v. Everts*, 17 N. Y. Supp. 268; *United States v. Moore* (C. C.) 129 Fed. 630.)

The statute in question was aimed at unlawful conspiracies or combinations in restraint of trade, and was manifestly not intended to cover labor unions. It is the right of miners, artisans, laborers, or professional men to unite for their own improvement or advancement or for any other lawful purpose, and it has never been held, so far as we are able to discover, that a union for the purpose of advancing wages is unlawful under any statutes which have been called to our attention. As said by Judge Taft in *Phelans Case* (C. C.) 62 Fed. 803: "Such unions, when rightly conducted, are beneficial in character." And it would be a strained and unnatural conclusion to hold that a statute aimed at pools and trusts should be held to include agreements as to prices for labor because the word "commodity" is used therein. As the right to combine for the purpose of securing higher wages is recognized as lawful at common law, a statute enacted to prohibit pools and trusts should not be held to apply to combinations to fix the wages for labor, unless it clearly appears that such was the legislative intent. Whatever of doubt there may be regarding the power of the legislature to do so, we do not think that the act in question covers combinations to fix the labor price whether that labor be skilled or unskilled.

Appellants rely largely upon the celebrated cases of *Loewe v. Lawlor et al*, 208 U. S. 274, 52 L. Ed. 488, 28 Sup. Ct. 301, and *In re Debs*, 158 U. S. 564, 15 Sup. Ct. 900, 39 L. Ed. 1092, and other like cases in support of their construction of the statute; but in our opinion none of these cases are applicable. The *Debs Case* is not in point. Others involved a pool between manufacturers and still other[s] boycotts. In the *Loewe Case* defendants were engaged in a boycott of plaintiff and its customers, and were in the performance of acts calculated to destroy plaintiff's business by driving away customers, by threats and coercion were driving away plaintiff's employees, and circulating false reports regarding plaintiff and its business, the effect of which was to destroy its interstate trade. These acts were held to be an unlawful interference with interstate commerce, and a violation of the antitrust law known as the "Sherman Act" (Act July 2, 1890, c. 647, 26 Stat. 209 [U. S. Comp. St. 1901, p. 3200]). The statute before us has nothing to do with commerce; nor does it have to do with restraint of trade or commerce as does the Sherman act. It has to do with pools and trusts organized in this State to fix or regulate the price of any article or commodity, or to fix or limit the amount or quality of any article, commodity or merchandise to be produced or sold in the State. Surely it has no reference to the amount or quality of labor to be produced or sold. Such a construction would be ridiculous. And, if it will not bear that interpretation, it follows that the word "commodity," when used with reference to prices, should not be held to include labor. No case has been cited which supports appellant's contention, and we have not been able to find any. On the other hand, the following lend

support to our conclusions: *Cleland v. Anderson*, 66 Neb. 252, 92 N. W. 307, 5 L. R. A. (N. S.) 136; *Downing v. Lewis*, 56 Neb. 386, 76 N. W. 900; *State v. Associated Press*, 159 Mo. 410, 60 S. W. 91, 51 L. R. A. 151, 81 Am. St. Rep. 368. It would be stretching the statute entirely too far to hold that it covers combinations to fix the price of labor. That the practice of medicine and surgery is labor no one, we think, will question.

The trial court was right in discharging the plaintiff, and its judgment must be, and it is, affirmed.

EMPLOYMENT OF CHILDREN—AGE LIMIT—CLEANING MOVING MACHINERY—*Sullivan v. Hanover Cordage Co., Supreme Court of Pennsylvania, 70 Atlantic Reporter, page 909.*—Paul Sullivan was injured while cleaning a machine in the company's factory, and sued by his next friend to recover damages. He was under 16 years of age, and the law prohibits such employment until the age of 16 years is attained. The machine was not in operation, and its only object in being put in motion at the time the injury was received was to aid in the work of cleaning it, and it was contended that this purpose removed the case from the operation of the law. Judgment had been against the company in the court of common pleas of York County, and, on appeal, it was affirmed by the supreme court. The principal point in the opinion, which was delivered by Judge Elkin, is contained in the following paragraph quoted therefrom:

It is argued with much force that the prohibition of the statute is directed against an attempt to clean a dangerous machine while it is in motion in the usual method of operation. In a sense this may be true, but it is the kind of motion, not the purpose, the statute guards against. It does not matter whether the attempt to clean is made when the machine is in motion for the purpose of operation, or whether it is in motion for the purpose of cleaning, if, in point of fact, the motion is of the same dangerous character in both instances. What the statute intended to prohibit was the employment of a boy of immature judgment, without experience and lacking in discretion to perform such dangerous work. We agree that if the machine at the time of the cleaning was not in dangerous motion, such as was usual in its operation, and if the motion, or revolution, at the time of the cleaning, was not dangerous, but simply consisted in partial revolutions made from time to time in order to facilitate the cleaning, the prohibition of the statute would very properly be held inapplicable. On the other hand, if the machine was propelled in the usual manner, and by the same force or power, while being cleaned as was usual when in operation, and if the motion or revolutions were of the same dangerous character, differing only in degree, the court would not be warranted in holding as a matter of law that the prohibition of the statute did not apply. Under such circumstances, it would at least be for the jury to determine whether at the time of the injury the machine was in dangerous motion. All

of these questions were submitted to the jury by the learned trial judge in such manner as to enable them to justly determine the rights of the parties to the controversy, and in our opinion appellant has no just cause to complain.

EMPLOYMENT OF CHILDREN—CERTIFICATE OF AGE—VIOLATION OF STATUTE—PERSONS LIABLE—*People v. Taylor, Court of Appeals of New York, 85 Northeastern Reporter, page 759.*—George H. Taylor was convicted in the court of special sessions of New York City of violating that provision of the labor law (Acts of 1897, c. 415, section 70, amended by Acts of 1903, c. 184) which prohibits the employment of children between the ages of 14 and 16 years without having filed a certificate in the employer's office. Taylor was treasurer of the Kursheedt Manufacturing Company, and the superintendent of its factory. One of the state inspectors found a girl employed in the factory who was under 16 years of age and without the required certificate. When Taylor was informed of the fact he stated that he had no knowledge of the violation of the law, and the girl, who had claimed to be over 16 when she was employed, was immediately discharged. Mr. Taylor was then arrested and convicted as above stated. This judgment was affirmed by the appellate division, but was reversed by the court of appeals and the defendant discharged as not being the person liable under the law for its violation.

The opinion of the court, which was delivered by Judge Chase, reads in part as follows:

The defendant was not individually an employer of labor. He was an officer, agent, and employee of the corporation, and responsible to it for the conduct of its business, but, so far as appears, in no way beneficially interested therein. Such an officer, agent, and employee has such powers and performs such duties in the management of the property and affairs of the corporation as may be prescribed by the directors or in the by-laws of the corporation. We assume that the person who owns a factory is liable for a violation of said section of the labor law, if contrary to the provisions thereof a child is employed by such owner, either directly or through an officer, agent, or employee, and wholly without regard to whether the employment is an intentional and willful violation of the statute. The term "person" includes a corporation. The owner, by or for whom the child is employed in violation of the statute, is liable, because such employment is prohibited. The question of intent is immaterial. The person actually entering into the contract by which a child is employed contrary to the provisions of the said section of the labor law is liable therefor, although such person acts as the agent or employee of another, because his act is also contrary to such provision of the statute.

The question directly before us, however, is as to whether an employee of a corporation, who is the superior in authority of another

employee of such corporation, is individually liable for such employment in the interest of and for the beneficial purposes of the corporation, when such employment is made by the subordinate without the knowledge or consent of the person charged with the crime, and contrary to his express direction. We think not. The labor law relating to factories does not treat the owner of a factory and the superintendent or manager thereof as equally responsible in all cases for carrying out its provisions.

An examination of all of the sections in the article of the labor law relating to factories shows that it was the intention of the legislature to make an owner, as the person beneficially interested, generally liable for violations of the article, and also to place upon the persons immediately or personally connected with the acts prohibited the responsibility for carrying out the provisions thereof.

There is no provision of the labor law which makes the superintendent of a factory of a corporation liable for the employment of a child under 16 years of age by a foreman or other employee, contrary to express directions given in good faith by such superintendent. The defendant is not in any sense a person who aids or abets such employment in violation of the statutes, or who counsels, commands, induces, or procures such employment. He was not a person who employed, permitted, or suffered the girl mentioned to work in the Kursheedt Manufacturing Company.

The judgment convicting the defendant of the crime violating section 70 of the labor law should therefore be reversed, and the defendant discharged.

HOURS OF LABOR OF EMPLOYEES ON RAILROADS—REGULATION OF COMMERCE—STATE AND FEDERAL STATUTES—CONSTITUTIONALITY—*State v. Missouri Pacific Railway Company, Supreme Court of Missouri, 111 Southwestern Reporter, page 500.*—The company named was indicted in the circuit court of Johnson County for a violation of the law of April 12, 1907 (page 332, Acts of 1907), which limits to eight per day the hours of labor of telegraph operators and train dispatchers in the State of Missouri. The indictment was quashed on the ground of the unconstitutionality of the statute, and the State appealed, the appeal resulting in the judgment of the lower court being affirmed. The federal law, fixing nine hours as the limit for the class of employees involved, was of prior enactment, but was not to take effect until March 4, 1908, and the State's counsel argued, (a) that the state law was controlling for employees engaged in intra-state commerce, and (b) that in any case it was valid from the time for its coming into effect (June 14, 1907) until the federal law should become operative. Various grounds were offered by the company for quashing the indictment, but as the decision of the court rested entirely on the answer to these two claims, the others need not be noted. The court denied both the contentions noted, for rea-

sons which appear in the following extract from its opinion, which was delivered by Judge Lamm:

(1) Assuming for the moment that fairly, i. e., equitably construed in their true spirit and intent, both laws were in effect at the same time, then the question is, may the state law stand as legislation upon intrastate commerce alone? We think not. The exact question in another form was before the Supreme Court of the United States in two cases just decided. (*Howard v. Railroad*, 207 U. S. 463, 28 Sup. Ct. 141; *Brooks v. Railroad*, *id.*) In those cases that court was construing a federal fellow-servant act, so drawn as not to distinguish between interstate commerce and intrastate commerce. The cases proceed on the theory that the Federal Congress might enact a fellow-servant act which was solely applicable to interstate commerce, but that an act so drawn as not to distinguish between the commercial power of Congress over interstate commerce and those strictly so engaged, and the power of the States to legislate upon intrastate commerce and those strictly engaged in that, could not stand. An analytical examination of the [Missouri] act of 1907 shows that it does not discriminate between telegraph operators assisting in the operation of interstate commerce trains and traffic, and those similarly employed in local trains and traffic. The provisions of the act are interdependent and not separable—it must stand as a whole as written, or fall as a whole. It follows, we think, that on the doctrine of the Howard case and the Brooks case, *supra*, the state law can no more stand in this case than did the federal law in those cases—provided, of course, the federal act and state law (in just intendment) were in force at the same time, and to that novel question we now address ourselves.

(2) We must construe the federal act by reading into its dry letter its manifest spirit and purpose. Its dry letter reads that it shall not go into effect for one year. What was the meaning of, the object to be subserved by, that suspension of the operation of the law? What, except to preserve the equities of the situation by impliedly giving common carriers engaged in interstate commerce one year in which to get a supply of experienced telegraph and telephone operators and trainmen to carry on their business without interruption and hindrance, and otherwise adjust their business affairs to the shorter hours required by that act? When broadly judged, the federal law must be construed as a notice (in the nature of a caveat) to all state legislatures, first, that Congress has occupied the ground by its statutory regulations; second, that in its high wisdom it has prescribed and marked out a transition or preparatory period of one year (a sort of truce period). Now with such broad and wise purposes read into the federal act shall any state legislature thereafter sit in judgment upon the wisdom of such truce period, and say, in effect, "We deem it too long and too liberal?" If the one law grants, by necessary implication, a breathing spell, shall the other take it away? If the one chalks out a policy, may the other rub it out?

In our opinion the comity that should exist between state and federal legislative power prohibits our taking that ungracious and narrow view.

It follows that the order quashing the indictment may be sustained on the ground herein discussed. Whether the motion to quash could be sustained also upon other grounds, is not necessary for us to decide in this case. Accordingly all other questions raised by that formidable motion are reserved. The judgment of the lower court is affirmed.

HOURS OF LABOR OF EMPLOYEES ON RAILROADS—REGULATION OF COMMERCE—STATE AND FEDERAL STATUTES—VALIDITY—*State v. Chicago, Milwaukee and St. Paul Railway Company, Supreme Court of Wisconsin, 117 Northwestern Reporter, page 686.*—The railroad company named was found guilty in the circuit court of Milwaukee County of violating chapter 575 of the Laws of 1907, which limits to eight per day the hours of labor of telegraph operators, including train dispatchers, and appealed. The question turned on the validity of the statute, in view of the prior enactment of a statute by the Congress of the United States on the subject of the hours of labor of employees engaged in interstate commerce. The supreme court held that the federal law was valid and controlling, to the practical exclusion of state legislation on the subject. The state law was therefore declared invalid, and the judgment of the lower court was reversed.

The grounds for this ruling are set forth in the following extracts from the opinion of the court, which was delivered by Judge Dodge:

The primary and most earnestly argued question is whether the act (Laws 1907, p. 1188, c. 575, sec. 1816m) prohibiting a corporation, operating a line of railroad in whole or in part in this State, to require or permit any (telegraph or telephone) operator (including train dispatcher) to remain on duty for more than one period of eight consecutive hours, so regulates interstate commerce intentionally or by necessary effect that it invades the power conferred upon Congress by article 1, sec. 8, Const. U. S., "to regulate commerce with foreign nations, and among the several States, and with the Indian tribes," that it can not stand.

The mere fact that in some degree interstate commerce is affected by the act of a state legislature is not universally sufficient to condemn that act.

On the other hand, state legislation is prohibited which directly and intentionally controls and regulates interstate commerce, as, for example, an act which in terms regulates freight or passenger charges for interstate carriage, or which imposes a direct prohibition or charge upon the importation of property from one State into another.

Between these two extremes, however, lies a broad field for legislation claimed to be justified by necessary protection of the safety of the local community, which more or less directly obstructs, restrains, and regulates the transaction of interstate commerce—legislation not enacted for that purpose, but incidentally having the result. The Supreme Court of the United States, in *Covington B. Co. v. Kentucky*, 154 U. S. 204, 14 Sup. Ct. 1087, has classified that field into

three classes of legislative acts: The first, where the States have plenary power and Congress has no right to interfere, which concern the strictly internal commerce of the State, and, while the regulation may affect interstate commerce indirectly, its bearing is so remote that it can not be termed in any just sense interference. The second includes cases of what may be termed "concurrent jurisdiction," where the States may act in the absence of congressional action. Obviously this field must be one where Congress has right and power to act if it sees fit, but where some restraint and regulation is necessary, and the authority therefor is deemed to be conceded to the States pending nonaction of Congress. The third is the class where, from the very intimacy with and directness of effect upon interstate commerce of any legislative action, and national scope of the subject of legislation, it is presumed that the refraining of Congress from promulgating any regulations must be considered to declare a policy that the subject shall be free from regulation.

Pretty obviously, under the decisions of the Supreme Court of the United States, the act we are considering must fall in the second class. The safety of the public may be so imperiled by the employment of incompetent or disabled persons in and about railroads, navigation, and the like that the necessity for some legislation in regard thereto is manifest, and the forbearance of Congress to legislate might well be deemed significant of its policy to leave the subject of regulation to the legislatures of the several States. In this line it has been held that examination of pilots or railroad engineers with reference to physical capacity, especially color blindness, as a condition of their employment, is competent for a State.

We can not doubt that prohibition of an overfatigued telegraph operator from directing the operation of trains falls within the State's power to control, even though thereby the conduct of interstate commerce might be impeded or burdened. But this power in the States is subject to that provision in the Constitution that Congress shall have power to regulate interstate commerce; that is, to prescribe the restrictions and limitations under which it shall be conducted, and when it prescribes those regulations it does so to the exclusion of state legislation accomplishing a like regulation directly or indirectly and whether intended for that purpose or not.

On March 4, 1907, before the act now under consideration was passed, and even before it was introduced in the Wisconsin legislature, Congress had legislated fully upon the subject of hours of labor for the very class of employees affected by section 1816m. It then provided (act March 4, 1907, p. 1415, c. 2939, 34 Stat. 1415 [U. S. Comp. St. Supp. 1907, p. 913]), that it should be unlawful for any common carrier subject to the act to require or permit any employee subject to the act to be or remain on duty for a period longer than 16 consecutive hours, and that no operator or train dispatcher should be required or permitted to remain on duty for a longer period than 9 hours in any 24-hour period in places continuously operated night and day, nor for a period longer than 13 hours in places operated only during the daytime, with exceptions in case of emergencies. This was a clear declaration by Congress of a will and policy that, so far as the regulation and safeguarding of interstate commerce might properly be affected by prescribing hours of labor for such

employees, the subject should be under control of Congress, and not of the state legislatures. Doubtless the state legislatures persisted in their power to protect the safety of their respective communities by reasonably regulating the hours of service of railroad employees, with the limitation, however, that they must not thereby restrict or effectively regulate interstate commerce. Under many of the decisions above cited the State was thereby precluded from enacting any law of that sort which would have that effect, for the field of policy and legislation was thus assumed by Congress and withdrawn from state competency. (*State v. Mo., etc., Ry. (Mo.)* 111 S.W. 500.)

Apart from this view, however, it is too obvious to need more than the statement that the legislation fixing 9 and 13 hours, respectively, as the permitted term of employment, was a declaration of a federal policy on that subject, and that a state law excluding interstate railways from the use of their employees on interstate commerce for 1 of the 9 hours or for 5 of the 13 hours would be in direct conflict with that policy. The absence of such an employee at a small station upon an interstate road might well be a most serious inconvenience and burden upon both the celerity and safety of interstate commerce past that station, and requirement of such absence would be in direct antagonism to the policy of the federal law permitting presence and employment. Not less obviously the act of Congress declared a policy that interstate railroads should have a reasonable time in which to adjust their business to the new restrictions, by postponing the date when the law should become operative for one year after its passage, thus indicating that such period of time was so necessary to reasonable convenience of interstate commerce. Indeed, this latter implication is not only clear from the act, but made the more certain by reference to the debates and reports of committees attending the consideration and passage of the law of Congress. Hence a state provision to the effect that the time for such preparation and adjustment should be restricted to the 1st of January, 1908, as contained in chapter 575, p. 1188, Laws of 1907, is in direct conflict with the policy of Congress. (*State v. Mo., etc., Ry., supra.*) We are therefore constrained to the conclusion that restriction of hours of labor of telegraph operators engaged in moving interstate trains or traffic is a field of legislation forbidden to the States by the federal Constitution, but also that the limitation contained in our statute is in conflict with and in negation of the act of Congress, and can not be enforced as to such employees.

The further contention is made by the respondent that, even if it be beyond the power of the State to restrict the services of an operator engaged in moving interstate trains, it is competent to so restrict as to one engaged exclusively upon trains or business wholly within the State, and that the law may be construed as so limited, and its validity as so limited be sustained. The principle invoked is doubtless sound, if it is reasonably possible to separate the permissible from the forbidden, and to believe that the legislature intended by the act to effect the one and omit the other.

Chapter 575, p. 1188, Laws of 1907, in terms is directed to every corporation operating a line of railroad, in whole or in part, in the State of Wisconsin, thus expressly including those who are engaged in interstate commerce. But it is also open to the other objection, held to be fatal, that it restricts the employment of all operators,

without discrimination as to the character of their services. It is matter of common knowledge, and is set up as a fact by the answer, that any operator who works upon trains or transportation wholly within the State also necessarily and at the same time works upon interstate trains and transportation. (*State v. Mo., etc., Ry., supra.*) The state legislature has in terms undertaken to restrict hours of work of employees engaged in safeguarding and conducting interstate commerce, as well as domestic; and, controlled as we must be by the decision of the federal Supreme Court, we can not import a meaning contradictory to the express words. Neither can we feel any certainty that the generality of the restriction was not an essential element in the entire legislative scheme, so that we might believe the legislature would have imposed upon domestic commerce, or on employees exclusively engaged therein, burdens not also resting on entirely similar acts of employees involving interstate trains or commerce.

We think the impracticability, if not impossibility, of limiting hours of work devoted to domestic commerce alone is so obvious as to preclude belief in any such legislative purpose. Hardly any act of a train dispatcher on a busy railroad can be conceived which does not affect both interstate and domestic commerce. He can not move or stop the most distinctively local train without affecting the interstate train, or vice versa. No extra or special can be put on the division without adjustment of other trains. Of course, also, every interstate train carries some purely intrastate freight or passengers. Many purely domestic trains carry some freight or passengers in transit to extrastate destination. It would seem that any severance of control over state from interstate trains involved so much of confusion and probability of danger, and its possibility even is so doubtful and experimental, that no legislature would absolutely precipitate it without careful consideration, nor without providing in the act for the event of the failure of such experiments. For this reason as well we are convinced that the legislative purpose involved what the legislative words include, the regulation of services of all operators, and would in nowise be satisfied, even in part, by a restriction to those whose acts affect only domestic commerce, if, indeed, there are any such.

The court then discussed the contention that the federal act is unconstitutional on the same grounds that the earlier law was so held (207 U. S. 463, 28 Sup. Ct. 141. [*Bulletin No. 74, p. 216*]), saying in part:

It is entirely natural and probable that an attempt would have been made to differentiate the latter enactment from the former one, and to escape the somewhat technical ground of invalidity in the former. It is without surprise, therefore, that we find such differentiating provision in the first section, to the effect "that the provisions of this act shall apply to any common carrier or carriers, their officers, agents and employees, engaged in the transportation of passengers," etc., between the several States, and also: "The term 'employees' as used in this act shall be held to mean persons actually engaged in or connected with the movement of any [interstate] train." It will also be noted that the hours of employment are prescribed for "any em-

ployee subject to this act." We can not doubt that by these phrases the operation of the present act was limited, not only to employers engaged in interstate commerce, but to the conduct of employees so engaged, to the exclusion of any who might be engaged purely in the domestic affairs of the employer, and that by this very distinction and limitation of the application of the act the legislation is brought within that portion of the decision which holds that the employer's liability act would have been valid had it been confined in application to the relation of employees while engaged in interstate commerce. (207 U. S. at page 496, 28 Sup. Ct. 141, 52 L. Ed. 297.)

Since our conclusion is fatal to chapter 575, p. 1188, Laws of 1907, no possible necessity for or benefit from a new trial can result. Hence:

Judgment reversed, and cause remanded, with directions to enter judgment for the defendant.

HOURS OF LABOR ON PUBLIC WORKS—EIGHT-HOUR LAW—CONSTITUTIONALITY OF STATUTE—*People ex rel. Williams Engineering and Contracting Company v. Metz*, Court of Appeals of New York, 85 *Northeastern Reporter*, page 1070.—The company named was a contractor engaged in constructing a sewer in the city of New York. After the completion of a part of the work, request was made for payments under the contract aggregating more than \$14,000. The attention of the comptroller of the city had been called to alleged violations of the labor law, which limits to eight per day the hours of labor of employees on work for the State or a municipal corporation, or by contractors or subcontractors therewith; the law also prescribes the payment of locally current rates of wages, and prohibits payment for work done in violation of the provisions named. Violations having been shown, the comptroller refused to pay the sum demanded, whereupon the company sued and secured a writ directing payment. This was appealed from by the comptroller and was reversed in the court of appeals.

The chief contention, and the only one that was of force, was that the law was unconstitutional, the facts of its violation not being disputed. The court considered only the single point of the limitation to eight hours of work per day, and the prohibition of payment where the law was violated, since the claim of the company would be extinguished if the law should be upheld in these respects, regardless of its other provisions. A law of like import had been passed in 1897, and declared unconstitutional in 1901, according to the constitution as it then stood, first, because it required the expenditure of money of the city or that of the local property owners for other than city purposes; second, because it invaded rights of liberty and property, in that it denied to the city and the contractor the right to agree with their employees upon the measure of their compensation.

(*People ex rel. Rodgers v. Coler*, 166 N. Y. 1, 59 N. E. 716 [Bulletin No. 35, p. 805]; *People ex rel. Treat v. Coler*, 166 N. Y. 144, 59 N. E. 776 [Bulletin No. 40, p. 615].)

(See also *People v. Orange County Road Construction Co.*, 175 N. Y. 84, 67 N. E. 129 [Bulletin No. 50, p. 181]; *People ex rel. Cossey v. Grout*, 179 N. Y. 417, 72 N. E. 464 [Bulletin No. 57, p. 687].)

The constitution of the State was subsequently amended so as to give the legislature authority to regulate and fix wages or salaries and the hours of labor, and make provision for the protection, welfare, and safety of persons employed on public works. The legislature availed itself of the authority thus conferred and reenacted the material parts of the earlier law as chapter 506 of the Acts of 1906, the amendment to the constitution having come into effect on January 1 of that year. Judge Vann, who delivered the opinion, speaking for an undivided court, stated the facts set forth above and enumerated the cases cited above saying that they do not apply to the constitution in its amended form. Continuing, he said:

The constitution, as construed by these decisions and others, was amended because it did not confer power upon the legislature to fix and regulate the hours of labor in doing public work or the wages to be paid therefor. When, therefore, the constitution as it stood before it was amended is read in connection with the amendment and in the light of the judicial decisions which led thereto, it is clear that the people intended to authorize such legislation as the provision relating to hours of labor now under consideration. The legislature acted under the amendment and reenacted the precise law the overthrow of which by the courts made the amendment necessary. These provisions of the constitution which were violated by the labor law of 1897 were not violated by the labor law of 1906, so far as we are now treating it, because in the meantime the constitution had been so amended as to modify said provisions by authorizing the legislature to regulate and fix the hours of labor upon public work. Unless the amendment did this it did nothing, and the constitution is the same in effect as it was before. The presumption is that the people in exercising their supreme power did not do a vain act, but effected a definite purpose.

Freedom of contract still exists, but not to the same extent as formerly, because the people have commanded that that right must yield so far as reasonably necessary to enable the legislature to fix and regulate the hours of labor on work done for the State or any civil division thereof. The same is true of the other provisions of the constitution which were relied upon by us in passing on the labor law of 1897. Every provision of the constitution as it was before it was amended which so conflicts with the amendment that it can not be fairly harmonized therewith, necessarily yields thereto, but only to the extent necessary to make the amendment reasonably effective.

As the legislature has power to regulate and fix the hours of labor on public work, it has the incidental power to compel obedience to its

commands by mild or severe penalties, as it sees fit. The method of enforcement is for it to determine. It can make violation a crime punishable by fine or imprisonment, or both, or provide for a forfeiture of the contract, or prohibit payment for work done thereunder. All this is within its sound discretion. The prohibition of payment under certain circumstances by the civil service law is quite analogous. The legislature is not required to act under the amendment at all, and any action taken, if unsatisfactory to the public either in principle or detail, can be retracted at any time in response to public opinion. If the legislation retards public improvements or increases municipal debts, or does not work well in other respects, there is ample room for public sentiment to act through the chosen representatives of the people.

Our conclusion upon this branch of the case is that, in view of the history of the amendment in question and the causes which led to it, the legislature now has power, and had when the present labor law was enacted, to fix and regulate the hours of labor on public work by limiting them to eight hours in one calendar day, and to provide that when that limit is exceeded no officer of state or municipal government shall be permitted to pay therefor from funds under his official control. We do not uphold the labor law as constitutional, to the limited extent that we pass upon it at all, because it is authorized by the police power which belongs to the State for we can not see that it bears any reasonable relation to the public health, safety, or morals. The reasoning of Chief Judge Cullen in the Orange County road case is conclusive upon that subject. (*People v. Orange County Road Construction Company*, 175 N. Y. 84, 87, 67 N. E. 129, 65 L. R. A. 33.) We uphold the statute simply because the people have so amended the constitution as to permit such legislation. The command of the people made in the form prescribed by law must be enforced by the courts.

It is claimed that the labor law violates the first section of the fourteenth amendment to the Constitution of the United States in so far as it provides that "no State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws."

It is urged that the labor law makes discriminations when there are no differences; that it arbitrarily discriminates between persons employed by private individuals and those employed by the State or by municipal corporations, and with no adequate reason exempts from the latter three classes of persons. It is insisted that it is a capricious distinction to permit a laborer digging ditches for a farmer to agree to work 10 hours a day, while if he does the same kind of work just across the line for a city he can not agree to work more than 8 hours, even if he wishes to work longer and the city is willing to pay him all he asks.

One purpose of the fourteenth amendment is to prevent state legislatures from making discriminations without any basis; in other words, to do away with class legislation. Following the decisions of the Supreme Court of the United States upon the subject, we have held that there must be some basis for classification, but that a basis is sufficient, even if it seems unreasonable to the courts, provided there

is reason enough for it to support an argument so that it could have seemed reasonable to the legislature. (*People ex rel. Hatch v. Rear-don*, 184 N. Y. 431, 77 N. E. 970; *People ex rel. Farrington v. Mensching*, 187 N. Y. 8, 79 N. E. 884.)

In the latter case we said that "there must be some support of taste, policy, difference of situation, or the like, some reason for it, even if it is a poor one. * * * The court must be able to see that the legislators could regard it as reasonable and proper without doing violence to common sense."

It is to be observed that the amendment to our state constitution which we have had under consideration relates only to public work, or work done for the State or for one of the political divisions created by the State, such as a county, city, town, or village. The labor law follows the constitution as amended in this respect. In other words, the State was dealing with itself and with its own creatures when its legislature passed that portion of the labor law that we are now considering.

We regard discussion of the question involving discrimination between persons employed by private individuals and those employed by municipal corporations as foreclosed by the decision of the Supreme Court of the United States in *Atkin v. Kansas*, 191 U. S. 207, 220, 24 Sup. Ct. 124. [See Bulletin No. 50, p. 177.] That case is directly analogous, for it involved the constitutionality of a statute of the State of Kansas which provided that eight hours should constitute a day's work for all laborers employed by or on behalf of the State or any of its municipalities, and made it unlawful for anyone thereafter contracting to do public work to require or permit a laborer to work longer than eight hours a day. A violation of this provision was made a crime punishable by a fine of not less than \$50 nor more than \$1,000, or by imprisonment not more than six months, or by both such fine and imprisonment in the discretion of the court. The plaintiff in error, a contractor for public work in Kansas City, was convicted of permitting one Reese, an employee, to voluntarily work 10 hours a day laying a pavement, and was fined \$100. The conviction was sustained. In that case, as in this, counsel argued that, "if a statute such as the one under consideration is justifiable, should it not apply to all persons and to all vocations whatsoever? Why should such a law be limited to contractors with the State and its municipalities? Why should the law allow a contractor to agree with a laborer to shovel dirt for 10 hours a day in the performance of a private contract, and make exactly the same act under similar conditions a misdemeanor when done in the performance of a contract for the construction of a public improvement? Why is the liberty with reference to contracting restricted in the one case and not in the other?"

The court, after reciting these questions asked by counsel, answered them as follows: "These questions, indeed the entire argument of defendant's counsel, seem to attach too little consequence to the relation existing between a State and its municipal corporations. Such corporations are the creatures, mere political subdivisions of the State for the purpose of exercising a part of its powers. They may exert only such powers as are expressly granted to them, or such as may be necessarily implied from those granted. What they lawfully do of a public character is done under the sanction of the State.

They are, in every essential sense, only auxiliaries of the State for the purposes of local government. They may be created, or, having been created, their powers may be restricted or enlarged or altogether withdrawn at the will of the legislature; the authority of the legislature, when restricting or withdrawing such powers, being subject only to the fundamental condition that the collective and individual rights of the people of a municipality shall not thereby be destroyed. * * * If, then, the work upon which the defendant employed Reese was of a public character, it necessarily follows that the statute in question, in its application to those undertaking work for or on behalf of a municipal corporation of the State, does not infringe the personal liberty of anyone * * * Whatever may have been the motives controlling the enactment of the statute in question, we can imagine no possible ground to dispute the power of the State to declare that no one undertaking work for it or for one of its municipal agencies should permit or require an employee on such work to labor in excess of eight hours each day, and to inflict punishment upon those who are embraced by such regulations and yet disregard them. It can not be deemed a part of the liberty of any contractor that he be allowed to do public work in any mode he may choose to adopt without regard to the wishes of the State. On the contrary, it belongs to the State, as the guardian and trustee for its people, and having control of its affairs, to prescribe the conditions upon which it will permit public work to be done on its behalf, or on behalf of its municipalities. No court has authority to review its action in that respect. Regulations on this subject suggest only considerations of public policy, and with such considerations the courts have no concern.

If it be contended to be the right of everyone to dispose of his labor upon such terms as he deems best, as undoubtedly it is, and that to make it a criminal offense for a contractor for public work to permit or require his employee to perform labor upon that work in excess of eight hours each day is in derogation of the liberty both of employees and employer, it is sufficient to answer that no employee is entitled, of absolute right and as a part of his liberty, to perform labor for the State; and no contractor for public work can excuse a violation of his agreement with the State by doing that which the statute under which he proceeds distinctly and lawfully forbids him to do." This decision was cited with approval in the somewhat analogous case of *Ellis v. United States*, 206 U. S. 246, 255, 27 Sup. Ct. 600. [Bulletin No. 71 p. 361.]

We close this branch of the discussion by quoting from the latest utterance upon the subject by the court of last resort upon federal questions to which our attention has been called. "It is undoubtedly true, as more than once declared by this court, that the general right to contract in relation to one's business is part of the liberty of the individual, protected by the fourteenth amendment to the Federal Constitution; yet it is equally well settled that this liberty is not absolute and extending to all contracts, and that a State may, without conflicting with the provisions of the fourteenth amendment, restrict in many respects the individual's power to contract." (*Muller v. Oregon*, 208 U. S. 412, 421, 28 Sup. Ct. 324, 52 L. Ed. 551.)

The relator claims that it is denied the equal protection of the laws because all in the same class are not treated alike, inasmuch as persons regularly employed in state institutions, engineers, electri-

cians, and elevator men in the department of public buildings during the annual sessions of the legislature, and those engaged in the construction, maintenance, and repair of highways outside the limits of cities and villages, are exempted from the operation of the labor law.

We do not regard this classification as arbitrary or capricious within the rule governing the subject, for it has some reason to support it, and hence was within the power of the legislature. Employees with duties to be discharged in the nighttime, or partly by day and partly by night, as in asylums, prisons, and the like, and those who operate the machinery for heating and lighting the state capitol when the legislature is in session, may properly receive separate classification in order to prevent public injury and inconvenience. Here, also, the State was dealing with its own agencies, and had the right to promote its convenience and welfare by making a distinction between those who perform manual labor for the most part and those who work largely with their brains. The one class of duties involves greater bodily fatigue than the other, and, as positions in state institutions are regarded as higher in rank and less exacting, they are eagerly sought for as more desirable.

The exemption of those employed in working upon highways outside the limits of cities and villages, apparently applies only to employees of counties and towns, or of the State, or contractors therewith, as in building and repairing state roads and the like. This is in conformity with the custom in rural districts, where, as it may be argued, the crops could neither be planted or gathered by laboring but eight hours a day. The reason for the distinction may not be conclusive, but it will support an argument, which is sufficient. Moreover, the employees in the exempt classes, as a rule, work away from home, under circumstances, conditions, and surroundings which differ from those affecting employees working near their homes in cities and villages. The law requires equality only among those similarly situated, and this rule, we think, was observed by the statute in question.

We have thus considered the subject of discrimination along the line of discussion adopted by counsel, but we regard it as of slight importance in this case because in the legislation in question the State was dealing with its own creations and could discriminate as it saw fit.

We think that, upon the facts as presented by the record before us, the comptroller was prohibited by a valid statute from paying any part of the relator's claims, and hence the orders below directing him to do so must be reversed and the proceeding dismissed, with costs in all courts, without prejudice to an application for an alternative writ of mandamus or to the institution of an action to recover the claim.

INTERFERENCE WITH EMPLOYMENT—DAMAGES FOR PROCURING DISCHARGE—MEASURE—GROUNDS—RIGHTS OF LABOR ORGANIZATIONS—*Carter v. Oster et al.*, St. Louis, Mo., Court of Appeals, 112 South-western Reporter, page 995.—Frank Carter, a nonunion workman, sued Otto Oster and others, members of Local Branch No. 29 of the National Association of Steam and Hot Water Fitters of America, to recover damages for maliciously procuring his discharge from

employment. He had recovered judgment in the St. Louis circuit court, which court afterwards granted a new trial, and from this order granting a new trial Carter appealed. The court of appeals agreed with the circuit court in ordering a new trial. The opinion contains the facts and reviews a number of cases affecting the rights of organized labor, and is in large part reproduced.

Judge Goode, speaking for the court, said :

Plaintiff is by trade an ammonia, steam, and hot water fitter, and at the dates hereafter mentioned had followed that employment for about 12 years. Defendants are alleged to be, and the proof tends to show they are, members of a trade union in the city of St. Louis denominated "Local Branch No. 29 of the National Association of Steam and Hot Water Fitters of America." This association and a score or more of other trades unions connected with the building and equipment of houses are affiliated with a larger association called the St. Louis Building Trades Council. The membership of the latter body consists of about 40 representatives from each of the different trades unions of the city, whose members follow crafts connected with the construction and equipment of buildings. The St. Louis Building Trades Council, as shown by the preamble to its constitution and by-laws, is designed to control all work on, and all workmen who have anything to do with the building and repairing of houses "from the foundation to the roof." Artisans, such as carpenters, plumbers, steam fitters, and others, are required by said constitution and by-laws to be members of their respective trades unions, and to have a card or license from the central organization, the St. Louis Building Trades Council, in order to be recognized by the latter or by union men, or have the benefits expected to be obtained by the organization of this branch of labor. Business agents, or walking delegates, were appointed by the different unions for the performance of several duties, of which one was to ascertain when and where nonunion workmen were employed by building contractors. Two of these agents or delegates who served said Local Branch No. 29 of Steam and Hot Water Fitters were defendants, John Reigert, jr., and Henry Brammeyer, who appear prominently in the evidence as the active agents in causing the grievances of which plaintiff complains. The evidence in the record, including the constitution and by-laws of the Building Trades Council, shows that the purpose of both said council and the subordinate unions which it dominates was to gather into a compact and effective organization all building mechanics for mutual assistance, so as to remove injurious competition, prevent the interference of outside influence in the building business, shorten the hours of labor, protect the members of each craft against encroachments by the advance of science and invention on their ability to earn a livelihood, cooperate with other labor associations for defense against the misuse of capital, effect adjustments between employers and employees, and generally to secure improvement in the condition of artisans. Section 3 of article 6 and section 5 of article 7 of the constitution and by-laws make plain that one purpose of the Building Trades Council was to induce building contractors to employ as laborers only union mechanics by insuring the contractors a certain measure of immunity from strikes, and by forbidding men to work on any job where work was done by non-

union men, or while grievances between a union and a contractor were unsettled. When the business agents or walking delegates of Local Branch No. 29 of the Steam and Hot Water Fitters, or the agents of the Building Trades Council, discovered a nonunion artisan at work on a job where union men were also employed, the agents would demand of the contractor or employer that the nonunion workman be discharged, and also compel such contractor to pay a fine for having employed him; and in this way the contractors were coerced into employing only union workmen. The evidence tends to show, too, that, in furtherance of this aim, threats of bodily harm to nonunion men and verbal abuse of them were occasionally resorted to by members of the union and sometimes carried out; but as to how far such violent methods were indorsed by the order or were acts of individual passion is not conclusively shown. The foregoing is a correct statement in a general way of the purposes and usages of the trades organizations with which the testimony deals.

In December, 1903, plaintiff Carter was at work for the Missouri Heating and Construction Company at wages of \$5.50 a day for eight hours' work. While he was installing an ammonia plant for his said employer on Morgan street, Riegert and Brammeyer discovered him. The Missouri Heating and Construction Company had in its employ at the time union mechanics connected with said Local Branch No. 29, and Brammeyer and Riegert, walking delegates of said branch, notified Barr, the manager of the Missouri Heating and Construction Company, to discharge Carter and another nonunion workman who was in the company's employ on pain of a strike by the union men. Carter and the other workman were discharged, in consequence of this notice, on December 24. Afterwards Riegert and Brammeyer served notice on Barr that his company had been fined \$200 for employing Carter. Barr at first refused to pay the money, but the union men in the company's employ quit work forthwith, and the company was compelled to pay in order to go on with its contract. After his discharge by the Missouri Heating Company and until February 29, 1904, when the present action was instituted, Carter procured work from several contractors, who, in turn, were forced by the action of Local Branch No. 29 to discharge him after he had worked a day or two, and in one or more instances fines were imposed on the contractors for employing him. His last job was on some work at the Louisiana Purchase Exposition grounds, and for a contractor by the name of Burgrobe. Burgrobe was compelled to dismiss the plaintiff by a strike of the union men instigated by said local branch's walking delegates, and on this occasion the evidence tends to show that plaintiff was menaced with an assault by union men and forced to call on the guards of the fair grounds for protection. After this he made an arrangement with a contractor by which the two were to do business on their own account, and plaintiff was to get a commission for his work; but the unions prevented them from getting any business. The essence of the testimony is that plaintiff's employers were forced to discharge him in from three to five instances between December 24, 1904 [3], and February 29, 1905 [4], by threats of strikes and fines, that contumelious epithets were applied to him by union workmen, and threats of violence, and that he was told he

would not be allowed to work on jobs. It is alleged that the wrongful and coercive methods of the defendants are still in force, and all employers of such labor as plaintiff performs have been terrorized into refusing to employ plaintiff, who, therefore, can obtain no work, and is held up to scorn and ridicule by defendants and other workmen. To recover for these torts to his person, and interferences with his means of getting a livelihood, all alleged to have been wrongfully, maliciously, and willfully made, plaintiff prayed damages; and under the instructions of the court the jury returned a verdict in his favor for \$750 actual and \$250 punitive damages. The court granted a new trial on two grounds. The first was that error had been committed in the reception of evidence of an assault made by one Malloy on a nonunion workman named Hoblitzell. Malloy is not a defendant, but was a member of Local Branch No. 29. Hoblitzell had worked with plaintiff for the Missouri Heating and Construction Company, and was assaulted by Malloy on the street. Plaintiff was not connected with this episode, and no doubt it was irrelevant, and evidence about it ought to have been rejected; but, in view of the abundant evidence to prove the acts for which plaintiff asks redress, the irrelevant testimony in question is hardly ground for setting aside the verdict. The other ground on which the court sustained the motion for a new trial is that the instruction on the measure of damages was erroneous, in that it permitted plaintiff to recover, in case of a verdict for him, not only his pecuniary loss, but for mental pain and suffering due to fear, anxiety, wounded feelings, and distress of mind caused by defendants' tortious acts.

1. Counsel for defendants contends no case was made for the jury, and insists that we pass on the question of whether there was or not. His position is that at the utmost, whatever was done by defendants, or any of them, which caused plaintiff to lose employment, was within their lawful rights, and therefore afforded no ground of action. Perhaps this position would be tenable, if, as counsel says, the evidence showed no more than that the members of Local Branch No. 29 of Steam Fitters, acting through their delegates, caused members of that order to cease working for contractors when plaintiff was employed on the job. The lower court instructed the jury that it was not unlawful or a conspiracy for workmen merely to combine together to quit an employment, unless an adjustment of differences between themselves and their employer was made, nor to refuse to associate or work with any man they saw fit. Many decisions, and perhaps the weight of authority, uphold the right of employees, either individually or in combination, to quit working because some fellow-servant is obnoxious to them when they are not governed by a contract of service of definite duration. This is on the principle that employees may choose both their employer and their working associates; and it may well be that, if not under contract, they may leave an employment when they please for any purpose they conceive to be for their welfare, or likely to aid in the amelioration of the lot of the laboring classes, if their conduct is dominated by such a motive rather than by a malicious desire to injure someone else. In recognition of this principle, the right of artisans to strike for an increase of wages or for shorter hours, or because a coemployee is obnoxious to them, has been often adjudged, though perhaps it can not be said that the current of authority is unbroken in favor of the

right to strike when the immediate purpose is to cause the discharge of an obnoxious fellow-servant, even though the ultimate purpose may be the attainment of better economic and social conditions.

But there can be no difference of legal opinion on one proposition—that third parties are answerable for keeping a man out of employment when the means employed to do so are unlawful—and on this all the authorities agree. (*Moran v. Dunphy*, 177 Mass. 485, 59 N. E. 125, 52 L. R. A. 115, 83 Am. St. Rep. 289; 1 *Tiedeman*, State & Fed. Cont. 440.) In the present case we have no occasion to inquire concerning the responsibility of the defendants further than to ask if the methods resorted to by them to prevent plaintiff from obtaining and retaining employment were illegal. It was proved that as soon as he was known to have work on a job the agents of Local Branch No. 29 would notify his employer to discharge him on pain of a strike, and would, moreover, extort from the employer a heavy fine for having hired him. The activity of the building business in St. Louis and the demand for labor were so great that contractors were coerced into dismissing Carter. If they refused to do that or to pay the fine, the union men in their service would strike, thereby preventing them from completing their contracts, and threatening them with losses and perhaps ruin. A sort of duress was brought into operation which contractors were powerless to resist.

Not every threat of a strike, or other attempt to intimidate, will afford a cause of action to an employee who is discharged in consequence of it. The threat must be of a substantial character, and adapted to influence a person of reasonable firmness and prudence. (1 *Eddy*, Comb. sec. 504.) In so far as Carter was kept out of work by threats of violence to his person, his case is within the statute; for interference in that manner with employment is a statutory crime. (*R. S.* 1899, sec. 2155.) Plaintiff was also molested by offensive remarks and abusive epithets. These acts may have exerted an influence over contractors, as well as the threats to strike, and have been partly instrumental in causing him to be discharged. As to the tortious and illegal character of such conduct, see 1 *Eddy*, Comb. sec. 506; *O'Neil v. Behanna*, 182 Pa. 236, 37 Atl. 843, 38 L. R. A. 382, 61 Am. St. Rep. 702. Procuring plaintiff's dismissal from various employments by means of strikes, and the extortion of penalties from contractors, were adopted as methods of preventing him from following his trade, and were likewise illegal. No doubt the members of the union had an economic purpose in view, namely, to unionize all building craftsmen, and thereby render laborers more independent in treating with contractors and capitalists. We need not decide whether or not it was unlawful for the defendants simply to cause a strike in order to procure plaintiff's discharge; for we have the further fact that money was extorted from those who gave him work, which was a method of intimidating contractors, devoid of semblance of legal right. We have found no case on the subject wherein either the point in decision or the reasoning of the opinion would tolerate such methods of depriving a workman of employment. Nor is it material that plaintiff may not have been dismissed from a service wherein he was hired for a definite time. If his discharge was procured by the defendants by illegal methods when otherwise he would have been retained by his employers, his cause of action is complete;

this being one phase of the general doctrine that third parties are liable for inducing breaches of contracts by unlawful methods. [Cases cited.]

2. On some phases of the evidence we think plaintiff would be entitled to damages for mental suffering. If nothing more was established than that defendants tortiously induced breaches of his contracts of employment, thereby keeping him idle, perhaps his damages might be confined to what he would have earned if at work. This is the general rule for the measurement of damages in an action for a wrongful discharge from service. (2 Wood, Master and Servant, 246.) But, as already said, the testimony conduces to show the conduct of the defendants was not only wrongful, but willful, malicious, and oppressive; and it is generally held that the mental suffering due to torts of that nature is an element of damages. Defendants' counsel contends there can be no award for mental suffering unconnected with a physical injury, which is true in actions for negligent wrongs, and wherein the conduct of the defendants does not exhibit malice, insult, or inhumanity. (*Trigg v. Railroad*, 74 Mo. 147, 41 Am. Rep. 305.) But there are torts of which mental distress is the proximate and natural result, and for which damages may be assessed. Such are malicious prosecutions, slanders, and willful trespasses to the person, either with or without physical injury; for instance the unlawful ejection of a passenger from a train.

We have found no case in which the question was raised regarding the right to such damages for wrongfully and maliciously keeping a person out of employment. But a man's trade and the contracts by which he is employed to exercise it are in the nature of property. He has the right to use the former and get the benefit of the latter without tortious interference. We see no reason why the rules applicable in actions for injuries to tangible property should not be applied in the case of an active and relentless conspiracy to prevent a mechanic from earning a living. It is true the present action is neither on a contract for its breach, nor is it, strictly speaking, for an injury to property. It sounds in tort for acts done pursuant to a conspiracy to prevent the plaintiff from following his trade. There is evidence to prove the methods employed to bring about this result were, as we have seen, unlawful; and moreover, that they were continuous, willful, malicious, oppressive, and well adapted to cause plaintiff fear and anxiety about both his personal safety and his means of earning a livelihood. The evidence tended to show the defendants or some of them, cherished a bad animus toward him. He had applied for and been refused admission to the order, though the testimony goes to show he was a competent workman, and certainly he never was discharged for lack of skill. After his application for membership in the union had been denied, he was followed by the delegates, and his contracts of employment interfered with in every instance. Several inferences might be drawn from the evidence regarding the reason why he was rejected by the union: That he was examined by its examining board and found to lack skill, or that he had not previously served an apprenticeship of five years as helper, or that the order only received applications for membership one month out of the year, and he applied at the wrong time, or that an increase of the number of steam fitters in the city of St. Louis was

deemed undesirable. Whatever the cause, his subsequent treatment by the union was harsh and oppressive.

3. While we think there was evidence to justify the court in instructing the jury that they might give plaintiff damages for mental suffering for the willful and malicious acts of defendants, we think a retrial was rightly granted because the instruction on the measure of damages did not leave it to the jury to find the quality of defendants' acts. Some of the testimony tended to vindicate at least a portion of them from the charge of willful and malicious conduct, if not from any connection with plaintiff's grievances.

The judgment is affirmed and the cause remanded. All concur.

LABOR ORGANIZATIONS—BOYCOTTS—USE OF MAILS TO DEFRAUD—
United States v. Raish et al., United States District Court, Southern District of Illinois, 163 Federal Reporter, page 911.—The Wahlfield Manufacturing Company proposed to enlarge its planing mill, and, in order to keep its employees together, to employ them in the construction of the new work. Some of the men were members of a local carpenters' union, others of a wood cutters' union, while others were members of no union. Pending the work, an officer of the carpenters' union requested the company to compel all its men to join that union. On its refusal to do so, this officer handed Mr. Wahlfield a letter stating that a fine of \$500 had been imposed on the company which would be remitted if only members of the carpenters' union were employed on the job; otherwise he must pay the fine or suffer a boycott. Letters were afterwards sent to the company's customers urging them not to handle its products, and Mr. Wahlfield had the president and secretary of the union indicted for an attempt to defraud by use of the post-office.

After the evidence was in, Judge Humphrey instructed the jury as follows:

The case you are considering is an indictment in three counts drawn under section 5480 of the federal statutes (U. S. Comp. St. 1901, p. 3696) charging these two defendants, Humphrey and Raish, with having devised and executed a scheme to defraud by use of the Post-Office Department of the United States.

The indictment is in three counts. The first count alleges that the scheme, as devised by these defendants, was that they, taking advantage of their position as officers of a certain labor organization, would cause an assessment of a fine to be placed against the Wahlfield Manufacturing Company, and induce that company to pay said fine under a threat of a boycott if the company did not pay, and that the scheme contemplated the use of the mail, and that certain letters in execution of the scheme did pass through the mail. The second and third counts are based upon a different theory; that the scheme devised was these defendants, taking advantage of their position as members and officers of the said labor organization, would by

use of the mails cause a boycott to be put in force against the business of the Wahlfield Manufacturing Company, and thus injure that company in its business. The first count is drawn upon the theory that their intention in the scheme was to induce Wahlfield to pay in order to escape the boycott, which would have been in fraud of the Wahlfield Manufacturing Company. The other two counts are drawn upon the theory that their device contemplated that he would not pay, but would suffer the boycott, and thus be defrauded in his business.

Either of these counts constitutes an offense under the statute. The indictment is no evidence of guilt. It is simply a formal method taken by the prosecuting department of the Government to present to the defendants in legal form the charge made against them. If you believe from the evidence beyond a reasonable doubt that the defendants did devise the scheme in question, did cause this fine to be assessed against the Wahlfield Company, and did cause the boycott to be undertaken against the same company and did use the mails in execution of that device, all as charged in the indictment, or in any count thereof, then you will find the defendants guilty. On the other hand, if you do not believe from the evidence beyond a reasonable doubt that the defendants devised the scheme in question to cause the fine to be assessed and the boycott to be put in force, and used the mail in execution thereof, as charged in the indictment, or in any count thereof, then you will find the defendants not guilty.

The burden is upon the Government. The Government must prove all the material allegations of the charge by evidence which convinces your minds beyond a reasonable doubt. I mean by that that the defendants do not have to prove their own innocence. The Government must prove their guilt. The presumption of innocence is with the defendants. You must allow that presumption to remain with them until it has been removed by the proof in the case convincing your minds of their guilt beyond a reasonable doubt. In order to constitute this offense, it is not necessary that any profit or gain should have come to either of the defendants. In order to constitute this offense, it is not necessary that the scheme should have been successful under either one of these counts.

The law further is, gentlemen, that if the scheme in question was devised by the union, as testified to by some of the witnesses, that, so far as any action was taken at all, it was all taken by the union and under the order and instructions of the union, still, if you further believe from the evidence beyond a reasonable doubt that the defendants or either of them participated in such action of the union or assisted in carrying out such action of the union, and acquiesced in such action of the union, then as to said defendants you will find them guilty just the same as though the action had been individual on their part. Evidence has been introduced tending to prove the good reputation of these two men. Reputation is the most valuable heritage any man can have. You are to consider that in making up your judgments. You are to consider all that the evidence shows as to previous good reputation in making up your judgments as to the guilt or innocence of these defendants. You are the judges of the facts. You find the facts for yourselves. You find them from the evidence, not from any outside inferences or impressions. You take the law from the court, and you are to give

to the law, as the court gives you the law, the same force which you give to the facts as you find the facts to be. You have heard the witnesses; seen them upon the stand; listened to their testimony. You have a right to consider what you have seen, and what you have heard as coming from these various witnesses; their manner and appearance upon the stand; their frankness and honesty; their interest in the case, if any has been shown; their prejudices, if they have shown any prejudice; their knowledge of the facts; their opportunity to have a knowledge of the facts about which they have testified; the reasonableness or unreasonableness of the stories they have told upon the stand in answer to questions; and from all these various considerations you make up your judgments for yourselves as to the weight to be given to the testimony of any witness.

You have nothing to do with the punishment. Congress has placed that burden upon the court. The form of your verdict will be, if you find the defendants guilty: "We, the jury, find the defendants guilty." If you find them not guilty, the form of your verdict will be: "We, the jury, find the defendants not guilty." And, if you find one guilty and one not guilty, the form of your verdict will be: "We, the jury find the defendant —— guilty, and the defendant —— not guilty"—filling the blanks with the names as you shall find.

The court then asked if there were exceptions to these instructions. Some were made by the counsel for the defense, but the court refused to modify its statements, and the jury found the defendants guilty.

DECISIONS UNDER COMMON LAW.

CONTRACT OF EMPLOYMENT—ENFORCEMENT—RESTRAINT OF TRADE—DISCLOSURE OF SECRET PROCESSES—*Taylor Iron and Steel Company v. Nichols et al.*, *Court of Errors and Appeals of New Jersey*, 69 *Atlantic Reporter*, 186.—The court of chancery had granted the complainant company a decree enjoining Wesley G. Nichols from divulging to anyone besides the complaining party any information known to him at the time of the making of a contract of service, or information acquired during the term of the contract, relating to the making of steel in the company's works; also from divulging treatments, processes, and secrets known to or used by him in the company's works, and from devoting during the term of said contract any part of his time, skill, labor, and attention to the service of anyone except the complainant company. The company operated under certain processes and patents for which it had procured licenses from time to time from the owner, under conditions that imposed secrecy. Nichols was an employee of about ten years' standing when a new contract of employment was entered into with him to run five years, one paragraph of which reads as follows:

(2) The said Wesley G. Nichols agrees that he will devote his entire time, skill, labor, and attention during the term of this agreement to the service of the Taylor Iron & Steel Company, and that he

will at all times faithfully perform the duties that may be assigned to him by the management of the said Taylor Iron & Steel Company to the best of his skill and ability for the compensation aforesaid, and that he will not at any time directly or indirectly, during the term of this agreement or afterwards, divulge to any person, firm, or corporation, except to the Taylor Iron & Steel Company and its officers, any information of any nature now known to him, or hereafter acquired by him during the term of this agreement, relating to or regarding any process of steel making or moulding or treating steel that may have been, is now, or may be hereafter during the term of this agreement, used in the works of the Taylor Iron & Steel Company, and that he will at all times hold inviolate the treatments, processes and secrets known to or used by him in the works of the said Taylor Iron & Steel Company.

As stated above the court of chancery granted an injunction to enforce this agreement. The court of errors and appeals, however, reversed this decree for reasons set forth in the opinion reproduced herewith, which was delivered by Judge Swayze:

The validity of this agreement is assailed by the defendant on several grounds. We think it is necessary to consider only the objection that it is invalid because it constitutes an excessive restraint of trade.

The rule of this State is that a contract in restraint of trade will not be enforced unless the restraint is no more extensive than is reasonably required to protect the interests of the party in favor of whom it is given, and not so large as to interfere with the interests of the public. *Mandeville v. Harman*, 42 N. J. Eq. 185, 7 Atl. 37, *Sternberg v. O'Brien*, 48 N. J. Eq. 370, 22 Atl. 348, both of which were cited with approval by this court in *Trenton Potteries Co. v. Oliphant*, 58 N. J. Eq. 507, 43 Atl. 723, 46 L. R. A. 255, 78 Am. St. Rep. 612.

Where the contract relates to personal services of a special, unique, or extraordinary character which can be performed by no one else and there is a negative covenant, the court sometimes enforces the negative covenant by injunction, as in *Lumley v. Wagner*, 1 De G. M. & G. 604. But the jurisdiction of equity rests upon the inadequacy of the legal remedy. *Pomeroy*, ¶ 1314, and the courts of other jurisdictions, as well as our own courts in the cases cited, have shown a reluctance to extend the jurisdiction. (*Whitwood Chemical Co. v. Hardman* (1891) 2 Ch. 416, 60 L. J. Ch. 428; *Rice v. D'Arville*, 162 Mass. 559, 39 N. E. 180.) The present case does not show that Nichols' services were of so special, unique, or extraordinary character that an injunction should issue.

The contract not only forbids Nichols to disclose any secret of the complainant, but also any knowledge he might have relating to the process of making steel that may have been used in the complainant's works, whether matter of common knowledge or not, whether known to him before he entered their employment or not; and it also requires him to hold inviolate not only the secrets of the complainant, but his own secrets, if he had any, and treatments or processes, whether secret or not. The necessary result of the enforcement of the contract would be that Nichols must either work for the complainant or remain idle; and, since the restraint is unlimited in point of time or

place, he might at the option of the complainant after the expiration of five years be without employment for the rest of his life at the only trade he knows. Such a restraint savors of servitude, unrelieved by an obligation of support on the part of the master. The courts have refused to enforce similar contracts. (*Alger v. Thacher*, 19 Pic. (Mass.) 51, 31 Am. Dec. 119; *Albright v. Teas*, 37 N. J. Eq. 171.)

The learned vice chancellor perceived the difficulty we have mentioned, but held that the agreement was limited to processes in use by the complainant which were not known to Nichols until they were disclosed to him by the complainant. If we were able to adopt this restricted meaning, we should still think the covenant an unreasonable restraint. Some of the secret processes were those known as the Hadfield processes which had been communicated to the defendant under the contract of 1896. That contract bound him to secrecy only until January 1, 1902. By necessary inference, after that time he was no longer bound. "*Expressio unius exclusio alterius*." On the vice chancellor's construction of the agreement of 1905, he bound himself forever not to disclose secrets learned under the contract of 1896. There is nothing to show that circumstances had so changed as to require a perpetual restraint in 1905, when a restraint for six years only had been adequate in 1896, or that reasonable protection of the complainant required a perpetual restraint of the defendant from disclosing what by agreement he had been entitled to disclose for the three years preceding. The complainants themselves are restrained only until July 1, 1908. In our judgment the complainant's case fails as far as it rests upon the written contract.

The complainant's right does not rest on the contract alone. We have held that a contract for secrecy may be implied from a confidential relation between employee and employer, and the divulging of a secret be enjoined. (*Stone v. Grasselli Chemical Co.*, 65 N. J. Eq. 756, 55 Atl. 736 [see Bulletin No. 50, p. 208].) The circumstances of this case require such a contract to be implied as to all secrets not covered by the special contract of 1896. As to those secrets, that written contract controls. Our difficulty in this respect arises out of the manner in which the case was tried. The bill avers, and the answer denies, that the complainant has secret processes. This was the very issue to be determined. The vice chancellor, however, refused to admit evidence as to the details of the alleged secret processes or cross-examination with reference thereto. The decree awards an injunction restraining Nichols from divulging the secret methods and processes used by the complainant in making manganese steel taught to or acquired by him while in their employment.

The difficulty which arises in this class of cases is that of affording adequate protection to a secret, if any disclosure of it is required. The court in a proper case where the details of the secret are known to all the parties, and no doubt arises as to its secret character, may well refuse to compel a disclosure. Such a case was *Eastman v. Reichenbach* (Sup.) 20 N. Y. Supp. 110. But in the ordinary case a disclosure to the court is necessary, and that for two reasons: (1) That the court may determine the issue of fact; and (2) that the terms of the injunction may be so specific that the question of a violation may be determined. In the present case the evidence is convincing that the complainant made a product of peculiar excellence,

which had obtained high repute in the market, and quite persuasive that it has special methods of manufacture; but it is impossible to tell from the evidence whether the results achieved were due to skill in manipulation acquired by experience, or to some secret process, or whether, if there was a secret process, it was more than the Hadfield process which the defendant Nichols had agreed not to disclose before January, 1902, or different from the process described in the Brinton patent which was taken out after the bill was filed and before the decree. Mr. Brinton himself testified that the process was essentially the Hadfield process, with such modifications as the complainant had made. A careful reading of the testimony has not enabled us to determine exactly what the complainant claims as a secret process.

The terms of the injunction are very broad. It restrains the defendant from divulging secret methods and processes, as if there was more than one, as, indeed, there may be, and it contains nothing by which it can be hereafter determined what are the methods and what are the processes, or whether the two are to be distinguished. The difficulty was thus expressed by Lord Eldon in an early case: "The only way by which a specific performance could be effected would be by a perpetual injunction, but this would be of no avail, unless a disclosure were made to enable the court to ascertain whether it was or was not infringed; for, if a party comes here to complain of a breach of injunction, it is incumbent on him first to show that the injunction has been violated." (*Newberry v. James*, 2 Merivale, 446, 451.)

The decree must be reversed to the extent that it enjoins Nichols from divulging or disclosing, directly or indirectly, to any person, firm, or corporation the secret methods and processes used by the complainant, and enjoins the American Brake Shoe & Foundry Company from disclosing or making use of any information relating to the secret methods and processes communicated to it by Nichols.

This determination does not dispose of the case. By the contract Nichols also agreed that he would devote his entire time, skill, labor, and attention during the term of his agreement to the service of the Taylor Iron & Steel Company, and to faithfully perform the duties that might be assigned to him. This portion of the agreement is severable from the agreement not to divulge secrets, and is in itself valid. We see no objection to an agreement to serve an employer to the exclusion of all others for a term of five years. A similar agreement has been sustained in the English courts. *William Robinson & Co., Limited, v. Heuer* (1898) 2 Ch. 451. Assuming that, if this portion of the agreement stood alone, we could, upon proper pleadings, sustain that portion of the decree which restrains the American Brake Shoe & Foundry Company from employing Nichols during the term of the agreement, such an injunction would necessarily rest upon the fact that both the obligation and opportunity of service under the agreement were still subsisting. The agreement itself, however, provides that it shall be terminated "by the failure of the said Wesley to faithfully observe and keep the terms and conditions by him to be kept and performed." The complainant, indeed, charges that Nichols' resignation was not accepted, but its whole case rests upon the theory that he had failed to faithfully observe and keep the terms of the agreement. The further provision that no termination of the

agreement shall deprive the complainant of any remedy it might have had during the continuation of the agreement or at any other time for violation of its terms is not sufficient to entitle the complainant to this injunction; for such a decree is in effect a decree for specific performance, and the complainant can hardly claim specific performance of a contract by virtue of a clause giving a remedy for breach of its terms, even if we assume that the court of chancery will ever enforce by injunction a contract for ordinary personal services. As is said in the brief for the defendant: "The complainant has the choice to claim damages for breach or to claim performance under the terms of the contract, in which case he must offer to perform on his part. The complainant in the bill does not offer to continue to employ Nichols, and the decree does not impose on the complainant any terms that such employment shall be offered."

The decree must therefore be reversed, but because of the rejection of evidence, the reversal should be without prejudice to further proceedings in the court of chancery, or to the filing of a new bill if the complainant prefers that course.

EMPLOYERS' LIABILITY—COURSE OF EMPLOYMENT—EATING LUNCH ON PREMISES—*Riley v. Cudahy Packing Company, Supreme Court of Nebraska, 117 Northwestern Reporter, page 765.*—This was an action by John Riley to recover damages for injuries received by him while working for the company named, in its fertilizer department. Judgment was in Riley's favor in the district court of Douglas County, and the company appealed, the appeal resulting in the judgment of the lower court being affirmed. The accident causing the injury occurred at lunch time, and the case is noted here merely to reproduce the ruling of the court on the question raised by the company as to course of employment. It was customary for the men to bring their lunches and eat them in the factory. Lockers were provided for their safe keeping, but no particular place for eating was designated. In going with others from the place where he had eaten, Riley, who was last, was injured by a large steel plate falling upon him. Questions of the employers' duty and of proof of negligence were disposed of, when the court said:

The defendant further contends that the relation of master and servant did not exist at the time of the accident, and therefore the rule requiring the master to furnish reasonably safe place and appliances for his servant had no application. In this view we can not concur. It appears that the defendant was desirous of having its plant operated with the smallest loss of time possible for lunch, and that it allowed but 30 minutes for lunch. It also knew that, because of the offensive odors, the workmen could not be expected to go to their homes or outside of the building to take their noonday meals without changing their clothing. It was not practicable for the workmen within the time allowed to change their clothing and go elsewhere for their meals. The defendant provided lockers, safe re-

ceptacles in which the workmen placed their clothing and lunch pails. We think it was fairly contemplated by their employment that the workmen should remain in the building and eat their lunches there. No particular place was provided wherein they should eat their lunches, but the defendant knew by long custom that the workmen ate their lunches in this particular place. It knew or should have known of the dangerous condition of the steel plate, and that it was liable to fall upon and injure them. We do not think it can be said that the workmen were mere licensees, as contended for by the defendant, but they were there as a matter of right and by the invitation of the master. It was necessary that the workmen should eat in order that they should have strength to labor, and we think that the workmen were entitled to the same protection and the same care of the master during the time they were taking their lunches upon the premises as they were while they were actually at their labor.

EMPLOYERS' LIABILITY—COURSE OF EMPLOYMENT—LEAVING PLACE OF WORK FOR PERSONAL ENDS—*Wilson v. Chesapeake and Ohio Railway Company, Court of Appeals of Kentucky, 113 Southwestern Reporter, page 101.*—M. B. Wilson was an employee of the company named, his duties requiring his continuous presence at its roundhouse in the town of Russell from 6 p. m. till 6 a. m. At about 3 a. m. he left his place of work to go to a restaurant for food, and while crossing the intervening tracks he was scalded by stepping into a pool of hot water formed by the leakage of pipes used to heat the cars. Wilson's suit for damages in the circuit court of Greenup County resulted adversely, whereupon he appealed. The court of appeals affirmed the judgment, as appears from the following extracts from the opinion of Judge Barker, who spoke for the court:

Upon the night in question a Pullman car was standing upon the track, and from four to six feet away an engine was standing. Appellant attempted to go through the passageway between them, and while so doing stepped into the pool, and was injured as above set forth. The evidence for the appellant showed that the employees of the corporation were permitted, and did frequently go to the restaurant in question and get meals during the night. It will be observed that, while the relation of master and servant still existed between the corporation and the plaintiff, yet he was not in the active discharge of any duty he owed to the corporation when he left the roundhouse and went to the restaurant. He was going because he was hungry and desired a meal. The master was therefore at the time under no duty to watch over and guard him against any danger he might encounter on his way to and from the restaurant.

Judge Barker then cited a number of cases at some length, and concluded:

The principle involved in the case at bar can not be distinguished from that settled in the cases above cited. The plaintiff, when he left his place of duty and undertook to walk across the yard of the

railroad company for his own purposes, assumed all of the hazard of the undertaking, and can not complain that the yard was not kept free from danger for his benefit. As said in the Pendleton case [104 S. W. 382, 31 Ky. Law. Rep. 1025], the master owed him no duty to anticipate his deviation from his duty and the possible danger which might arise to him therefrom, and to provide against it. He took things as he found them, and suffers all consequences of his own error, and can not make his master liable therefor.

EMPLOYERS' LIABILITY—RAILROAD COMPANIES—NEGLIGENCE—CONTRIBUTORY NEGLIGENCE—PROXIMATE CAUSE—*Dortch v. Atlantic Coast Line Railroad Company*, Supreme Court of North Carolina, 62 Southeastern Reporter, page 616.—G. L. Wiggins was conductor on a freight train of the defendant company, and was killed by jumping from a moving car. His administrator, Dortch, sued for damages, and secured a verdict in the superior court of Wayne County, from which the company appealed. The judgment of the court below was affirmed, Wiggins' negligence in jumping from the car being held by the supreme court not to be the proximate cause of his death. The facts appear in the opinion, which was delivered by Judge Brown, and which is in part as follows:

The evidence in this case was all offered by plaintiff, and tended to show that plaintiff's intestate was conductor in charge of the switching train of the defendant at Rocky Mount on the 7th day of March, 1907. The stone car was shifted onto the spur track, and left there a short time, while the other cars in the train were placed on the upper track. Then the engine came back to couple to the car of stone. When the conductor left the car of stone he failed to tie the brakes. His attention was called to this before he attempted to couple, and he was told, in the event he missed coupling the car, it would go into the river. Notwithstanding this, he attempted to make the coupling without fastening the brakes, saying that he could make the coupling. He scotched the car with wood, and signaled the engineer to move back cautiously. The engineer did move cautiously, but the car, being on a curve, failed to couple, and the car jumped the wood scotch and moved a few feet. The conductor was again told to apply the brakes. He got some wood and scotched the train, but did not apply the brakes, saying that he would make the coupling that time. The second attempt failed, and the car jumped all the scotches, and by that time, to use the language of the witness, "had such momentum that no brake could have stopped it." The conductor and one of his brakemen jumped on the moving car to apply the brakes. Following the language of the plaintiff's witness, "he did apply them, but the application did no good. I was watching him and the car at the time. Shortly after getting on the car, I saw a man, and he must have lost his head, and swung out on each [the] side next to the mill. Instantly the car jumped the track, and I heard Mr. Wiggins groan. I ran to his assistance and found him dead. He was between the car and the mill wall." The evidence

tends to prove that the car was derailed some four or five car lengths from where it started, because one of the rails had been moved out of alignment, and had been in that condition some 8 or 10 months. The rails lacked four inches of meeting at the point where the car jumped the track, and where the intestate was killed. The spur track generally was in very bad condition. There is also evidence tending to prove that, "if the car had not jumped the track, the plaintiff's intestate would have been safe on top the car." At the conclusion of the evidence the defendant moved to nonsuit. The court overruled the motion. Defendant excepted.

That the defendant is guilty of inexcusable negligence in allowing its track, although a spur track, to get into such dangerous condition is not a debatable question. All the evidence shows that this track was in a desperately bad condition, and that the derailment of the car, which was the occasion of the intestate's death, was due to its defective state. At the very point at which the rails were four inches out of alignment the car left the track, under such headway that brakes could not stop it. We are not confined here to a *prima facie* case of negligence, evidenced by the fact of a derailment, but we have complete proof of a condition of track amounting almost to gross negligence, which caused a derailment resulting in death. We have also evidence tending to prove that the intestate himself was guilty of negligence, first, in not fastening the brakes before undertaking to couple up the car; and, secondly, in jumping on the rapidly moving car with a view to stop its headway. The question is, What negligence was the proximate cause of his death? It is true that, had the intestate not jumped on the car he would not have been killed, and there is a probability that had he tied the brakes the car would not have gotten from his control. The former, while reckless, was in the master's service and for its benefit, for he was endeavoring to save the car and its load from the river. The latter, while the part of wisdom, did not cause the derailment, no more than the other. The plaintiff's intestate may have committed both acts of negligence, and yet have lived uninjured, had the track been in reasonably good condition. There is no such intermingling and cooperation of these alleged negligent acts of the intestate with the negligence of the defendant as to indicate that the intestate's negligence concurred with that of the defendant and helped to produce the derailment. (7 Am. & Eng. Enc. 374.) Of course, had the car not been derailed, and had it gone overboard, and had the intestate been drowned, the negligence of the defendant in maintaining so dangerous a track would not have been the cause of his death, but rather the intestate's own careless conduct. But it is incontestable that the defective track caused the derailment, and not the act of the intestate. We have no difficulty in concluding; therefore, that the negligence of the defendant was, in any view of the evidence, the proximate cause of the derailment.

The next mooted question is was the intestate, at the time of the derailment, guilty of contributory negligence in jumping from the car? Ordinarily, of course, jumping on or off a moving car is such contributory negligence as bars recovery, and it is so held generally in the courts of this country. Hutchinson on Carriers, sec. 1177, citing many cases. (*Brown v. R. R.*, 108 N. C. 34, 12 S. E. 958; *Burgin v. R. R.*, 115 N. C. 673, 20 S. E. 473.) But the principle

does not apply here. Although the intestate risked life and limb in jumping aboard the car, he did it in the endeavor to save it from destruction. There is no evidence that he then knew of the gap in the track which caused the derailment. As to that, he had a right to believe that he was comparatively safe. When he felt the rapidly moving car was leaving the track, he suddenly learned that he was in a position of great danger. As the sequel proved, it would have been safer not to jump, but under such conditions the law does not exact infallible judgment, but only reasonable care and prudence. (*Hinshaw v. R. R.*, 118 N. C. 1047, 24 S. E. 426.) The able and careful judge who tried this case properly left that to the jury, when he instructed them: "If you find the derailment was caused by the bad condition of the track, but you also find that the plaintiff's death was caused by his act in attempting to get off the car while it was passing between the buildings, and that his conduct in this respect was negligent—that is, that he did not exercise the care that a man of ordinary prudence would have exercised under similar circumstances—then such conduct on his part would be the proximate cause of his death, and you should answer the second issue, 'Yes.'"

Upon a careful review of the entire record, we are unable to find any error of which the defendant has just cause to complain.

EMPLOYERS' LIABILITY—RES IPSA LOQUITUR—APPLICATION OF DOCTRINE—*La Bee v. Sultan Logging Company*, Supreme Court of Washington, 97 Pacific Reporter, page 1104.—This case was one to recover damages for injury to an employee, and from a judgment in plaintiff's favor the company appealed to the supreme court. Judgment was affirmed (47 Wash. 57, 91 Pac. 560) and a petition for rehearing denied. The opinion on the question of rehearing discusses the application to employers' liability cases of the doctrine of *res ipsa loquitur*, which may be expressed, "the event speaks for itself." The effect of the doctrine is to relieve a plaintiff of the duty of proving negligence in cases where the accident itself is of such a nature as to necessarily involve negligence. It is rarely applied to employers' liability cases, but is formally adopted by the court in this case, as appears from the following opinion, which was delivered by Judge Fullerton, without dissent:

This case is before us on rehearing. For the former opinion see *La Bee v. Sultan Logging Company*, 47 Wash. 57, 91 Pac. 560, where will be found a statement of the issues involved. In the petition for rehearing, as well as in the oral argument made at bar, it is insisted that the court erred in applying the doctrine of *res ipsa loquitur* to a case between master and servant. It is contended that this doctrine is applicable only "to cases between carrier and passenger, and other cases wherein the person sought to be held occupies the relation of insurer," but is never applied to a case where the servant sues the master for negligence causing personal injuries. The weight of authority seems to support counsel's contention in so far as they contend that the doctrine is not applicable to cases between master and

servant. The federal cases uniformly so hold, and in the majority of the States the same rule obtains. See *Northern Pacific Railway Company v. Dixon*, 139 Fed. 737, 71 C. C. A. 555, and the cases there collected. But, the question being a new one in this State, we have felt ourselves at liberty to inquire into the reason for the rule, and to discard it if we found the reasons given to maintain it unsatisfactory. These reasons are perhaps as well stated in the case cited as in any other. It is there said that the doctrine is inapplicable to cases between master and servant brought to recover damages for negligence, "because there are many possible causes of accidents during service, the risk of some of which, such as the negligence and other ordinary dangers of the work, the servant assumes, while for the risk of others, such as the lack of ordinary care to construct or keep in repair the machinery or place or [of] work, the master is responsible. The mere happening of an accident which injures a servant fails to indicate whether it resulted from one cause the risk of which is the servant's, or for one of those the risk of which is the master's; and for this reason it raises no presumption that it was caused by the negligence of the latter." In other words, the reason is that, because in some instances it is difficult to determine from the facts shown whether the blame is the master's or the servant's, the master shall have the benefit of the presumption in all cases and the servant in none. It has seemed to us that this reasoning is not only unsound, but is grossly unfair to the servant. Where the facts of the case are such as to eliminate blame on the part of the servant or his fellow-servants, but show *prima facie* neglect on the part of some one, we think the master should be put to his proofs to show that the blame is not his, just the same as he would be were the injury to a stranger. Such a rule casts the burden upon the person who is in a position to know the facts, and who can make the proofs by direct and positive evidence, while the rule contended for by the appellant compels the resort to indirect and circumstantial evidence. In this case the servant made proofs to the effect that the master furnished him with an instrument with which to do his work and directed him to do it in a particular manner; that he took the instrument and proceeded to perform the work in the manner directed, when the instrument gave way and injured him, and we think it no hardship to cast on the master the burden of showing that the instrument was suitable for the purposes for which it was intended and that any defect therein was unknown to the master, and by reasonable diligence could not have been discovered by him.

This is not holding, as the appellant seems to argue, that a presumption of negligence arises from the mere fact of injury. The injury itself proves nothing. It may have been the fault of the servant. But, in a case where the servant eliminates any fault on his part by showing that the injury was caused by the giving way of an instrumentality furnished him with which to work while he was using it for the purposes intended and in the manner directed, he shows that the fault is in the instrumentality itself for which the master is *prima facie* responsible. The case differs from an ordinary case of injury only in the manner of proof. In each case, of course, a *prima facie* case of negligence against the master must be made out, but in the one it is made out by showing the injury, and eliminating negligence on the part of the servant and his fellow-servants, while

in the other it is made out by direct evidence of negligence on the part of the master.

Counsel make another contention it may be well to notice. The paragraph we have quoted in our statement of the contentions made by counsel is from their petition for rehearing. In it, it will be observed, counsel assume that the doctrine of *res ipsa loquitur* is applied only in those cases where the person sought to be held occupies the relation of insurer to the person injured. The illustration given is that of carrier and passenger. But counsel must know that the assumption that a carrier is an insurer of the safety of its passengers is against the great weight of authority, even if it is now the rule in any jurisdiction. Certainly this court has never so held. On the contrary, in our own reports, and the reports generally, can be found cases where the carrier has successfully defended against its liability for injuries suffered by its passengers. If it was an insurer, its defense would have been confined to the amount of damages to be awarded. It would not have extended to the liability itself. Nor is the doctrine confined in other instances to the case where the person sought to be held is an insurer of the safety of the person injured. This court in the case of *Anderson v. McCarthy Dry Goods Co.* (Wash.) 95 Pac. 325, applied the doctrine to a case where a person was injured while in a dry goods store by the fall of a basket from an overhead carrier system; citing authority to show that the holding was sustained by the great weight of authority. Surely it will not be contended that the proprietor of a merchandise store is an insurer of the safety of every person who enters it. But these latter inquiries are not material to the question in hand. They are cited to show that the holding that denies to a servant, simply because he is a servant, the benefit of the rule of *res ipsa loquitur* in a proper case, is unreasonable and unjust, and is required by no rule of public policy.

EMPLOYMENT OF LABOR—TERM—EVIDENCE—BREACH BY EMPLOYER—DAMAGES—*Maynard v. Royal Worcester Corset Company*, Supreme Judicial Court of Massachusetts, 85 *Northeastern Reporter*, page 877.—Charles B. Maynard sued the company named for breach of contract, and recovered damages before a justice of the superior court of Worcester County. Exceptions to this judgment were taken by the company, but were overruled by the appellate court. The facts are set forth in the opinion, which was delivered by Judge Rugg, and which is, in the main, as follows:

This is an action of contract, by which the plaintiff seeks to recover from the defendant money claimed to be due on account of salary. There are two counts in his declaration, one alleging salary due, under a contract for one year, to December 1, 1907, and the other that due under a separate contract for the month of December. The case was heard before a justice of the superior court, who found for the plaintiff in a sum less than the salary. The defendant's exceptions bring before us all the evidence warranting a finding of a contract for a stipulated time between the plaintiff and defendant, and

whether there was sufficient evidence to warrant a finding as to damages.

The evidence was somewhat conflicting, but, having regard only to its aspects most favorable to the plaintiff, as we must in passing upon the action of the superior court, would justify a finding that he had been in the employ of the defendant for several years, with the duty, among others, of figuring costs; he was also a director of the company, and always received his pay weekly; the financial year of the defendant began on the 1st day of December, and on December 9, 1904, its board of directors voted that the salaries of the president, treasurer, clerk, one Bennett, and the plaintiff "be increased 20 per cent on the amount of their salaries for the year 1904;" a short time thereafter a single payment for the amount so voted for the year then just ended was made to the plaintiff; under date of December 20, 1905, the defendant's board of directors passed a vote respecting the same persons, that their "salaries * * * be increased 20 per cent on the amount of their present salaries for the year 1905;" on December 12 or 14, 1906, the treasurer of the defendant said to the plaintiff, "Mr. Fanning requests me to say your salary for the coming year will be \$5,000, and he also wished me to state that your last year's salary will be \$5,000;" the salary for the year preceding had been \$1,000, and \$1,000 was immediately paid to the plaintiff, and the weekly payments thereafter made were on the basis of \$5,000 per year; about the middle of September, 1907, Mr. Fanning, the president of the defendant, who was authorized to employ and discharge employees and fix their salaries, said to the plaintiff that, unless he changed certain conditions, his contract would terminate January 1st, to which the defendant replied, "If you wish, * * * I will accept and make my plans accordingly January 1st." In the latter part of September the plaintiff was discharged without adequate cause.

Whether there is a contract for services for a definite period of time in any case depends upon all the attendant conditions surrounding the agreement, as well as upon its terms when the latter are not specific and clear. Several features tend to support the contention that the plaintiff was employed for a year from the 1st of December, 1906. For three years at least there had been an annual readjustment of compensation, early in December. Where there has been a recognition of annual employment, the bare continuance of service after the expiration of the term without anything being said is of some importance in the inquiry, whether the contract of service is renewed by implication for the like period. (*Dunton v. Derby Desk Co.*, 186 Mass. 35, 71 N. E. 91.) The word "salary" was used both in the vote of the board of directors for the years 1904 and 1905, and in the conversation between the treasurer of the defendant and the plaintiff, in describing the compensation which the plaintiff was to receive. This word is perhaps more frequently applied to annual employment than to any other, and its use may import a factor of permanency. (*Henderson v. Koenig*, 168 Mo. 356, 68 S. W. 72, 57 L. R. A. 659; *People v. Myers* (Sup.) 11 N. Y. Supp. 217. See sub nomine *Burrill's Law Dictionary*.) The unit of time used in describing the compensation was one year. In many jurisdictions this fact standing alone is regarded as sufficient evidence of the term of employment, and perhaps this is the implication of *Nichols v. Coolahan*, 10 Met.

449. Although some courts hold that a hiring at so much a year, where no time is specified, is indefinite and may be terminated at will (see *Martin v. N. Y. Life Ins. Co.*, 148 N. Y. 117, 42 N. E. 416; *Pinckney v. Talmage*, 32 S. C. 364, 10 S. E. 1083 [etc.]), the weight of authority is that this circumstance alone, in the absence of any other consideration impairing its weight, will sustain a finding that there was a hiring for that period. (*Chamberlain v. Detroit Stove Works*, 103 Mich. 124, 61 N. W. 532; *Beach v. Mullin*, 34 N. J. Law 343 [etc.].)

Without reviewing the cases or analyzing the principles to determine which is the sounder view, it is enough to say that the use of the sum of money equivalent to a year's pay, in describing the amount which the plaintiff was to receive, was a proper circumstance for consideration in connection with other incidents. The length of the term of service reasonably inferable as the understanding of the parties, from their words, course of dealing and other acts, was a fact to be determined upon all the evidence. Grouping all these circumstances, and giving them the color most favorable to the plaintiff, as the trial court had a right to do, we can not say that his finding, that both the contracts alleged were made, was unjustified. (*Tatterson v. Suffolk Mfg. Co.*, 106 Mass. 56; *Davis v. Ames Mfg. Co.*, 177 Mass. 54, 58 N. E. 280.)

The refusal to grant the fourth prayer of the defendant, to the effect that the plaintiff was not entitled to recover on the second count of his declaration, was equivalent to a finding that he was so entitled. (See *Jaquith v. Davenport*, 191 Mass. 415, 418, 78 N. E. 93.) This determination also is not without supporting evidence. The testimony of the plaintiff, that Mr. Fanning said to him in September that unless certain conditions changed his contract would end January 1st, together with the plaintiff's reply that he would accept and make his plans accordingly for January 1st, which perhaps carried a little further and clinched the proposition of Mr. Fanning, would authorize the finding of a contract for service, which included December.

The plaintiff testified that he made no effort to secure employment, from the time he was dismissed from the service of the defendant, on September 21st, until January 1st following, and that he did not think he could have secured a position if he had tried during that time, and that in December he was making arrangements to go into business for himself. This was the only oral evidence, outside the amount of salary which he had received from the defendant, as to the damages sustained. It is strongly urged by the defendant that, on this state of the testimony, the plaintiff is entitled to recover only nominal damages. Where one is under contract for personal service, and is discharged, it becomes his duty to dispose of his time in a reasonable way, so as to obtain as large compensation as possible, and to use honest, earnest and intelligent efforts to this end. He can not voluntarily remain idle and expect to recover the compensation stipulated in the contract from the other party. (*Olds v. Mapes-Reeves Construction Co.*, 177 Mass. 41, 58 N. E. 478; *Ransom v. Boston*, 192 Mass. 299, 307, 78 N. E. 481; *Id.*, 196 Mass. 248, 81 N. E. 998.) The amount of damages is to be determined by the wages which he would have earned under the contract, less what he did in fact earn or in the exercise of proper diligence might have earned in another employ-

ment. (*Cutter v. Gillette*, 163 Mass. 95, 39 N. E. 1010.) It seems to be the generally accepted rule that the burden of proof is upon the defendant to show that the plaintiff either found, or, by the exercise of proper industry in the search, could have procured other employment of some kind reasonably adapted to his abilities, and that in absence of such proof the plaintiff is entitled to recover the salary fixed by the contract. (*Milage v. Woodward*, 186 N. Y. 252, 78 N. E. 873; *Porter v. Burkett*, 65 Tex. 383 [etc.].)

If this view be correct, the defendant has no ground for complaint, because he introduced no evidence. It is not necessary to decide in the present case whether this is the correct rule. It is enough to say that the contrary view, which prevails in Kentucky, Mississippi and perhaps elsewhere [cases cited], has not been distinctly adopted heretofore in this Commonwealth.

The finding of the court in the present case was for a less amount than the contract price, although there was the testimony of the plaintiff that he did not think he could have secured employment if he had tried. There was evidence tending to show that during a part of the time at least covered by the contract he was engaged in preliminary preparations for establishing a business on his own account. From these circumstances, as well as from the plaintiff's own manner in testifying and other inferences, which the trial court drew from the appearance of the witness, he might have been satisfied that prompt, reasonable and bona fide efforts to obtain other employment would have been successful, or that by the use of his time for his own advantage in his private business he would have gained such value as to reduce materially the amount, which he might otherwise recover from the defendant. (*Alaska Fish & Lumber Co. v. Chase*, 128 Fed. 886, 64 C. C. A. 1.) The court is not precluded from using his own knowledge of practical affairs or applying his judicial sense to the consideration of a matter of such common occurrence as securing employment. If opinion evidence had been introduced, the court would have used it or not as he found it credible and helpful. He might well have been guided quite as much by his judgment of the value of the plaintiff's services, based upon his appearance, the character of work he had done and was competent to do and the wages he had received. It is the same problem, which courts and juries often solve in passing upon the extent of personal injury, and in determining how long disability may continue, and how soon and at what compensation employment may be found. They are frequently compelled to act upon evidence as slender as that in the present case. That it is difficult to ascertain the damages or that they depend upon events which are contingent, uncertain or matter of opinion is no sound objection to the recovery. Therefore, on this branch of the case also the finding of the court is not wholly unsupported.

Exceptions overruled.

LABOR ORGANIZATIONS—PROCURING EXPULSION OF MEMBERS—CONSPIRACY—LIABILITY OF ONE PARTY ONLY—DAMAGES—*St. Louis Southwestern Railway Company v. Thompson*, *Supreme Court of Texas*, 113 *Southwestern Reporter*, page 144.—W. Z. Thompson had

been expelled from the Grand International Brotherhood of Locomotive Engineers by the action, as he alleged, of the railway company above named together with certain individuals, members of the Brotherhood. Thompson sued to recover damages, making the company and these individuals parties defendant, and secured a verdict against the company alone, which judgment was affirmed by the court of civil appeals, 108 S. W. 453. [See Bulletin No. 78, pp. 608-617, where the facts are more fully set forth.] From this judgment the company again appealed to the supreme court of the State, which reversed the courts below on grounds that appear in the quoted portions of the opinion given herewith. The opinion was delivered by Judge Brown, who, after a preliminary statement, said:

The case was tried before a jury, which, after being out for some time, presented to the court the following question: "Hon. R. W. Simpson, district judge, Dear sir: A part of the jury is not clear as to whether they can find for the defendant separately, as well as collectively. Therefore we ask your advice on this point. Very respt., G. H. Aikins, foreman." And to this the court replied in writing as follows: "Gentlemen of the jury: In answer to foregoing question, you are charged as follows: If you should find for all the defendants, your verdict will be 'We the jury find for the defendants.' If you should find in favor of some defendants and against others, your verdict should state against which defendants you find, naming them, and in favor of which defendants you find, naming them. R. W. Simpson, judge presiding." The jury returned this verdict: "We, the jury, find for plaintiff in this case a verdict for twenty-five hundred dollars (\$2,500.00), five hundred (\$500.00) as actual damages, and two thousand (\$2,000.00) as exemplary damages against the defendant the St. Louis Southwestern Railway Company and for the other defendants. G. H. Aikins, foreman." The railroad company moved in arrest of judgment, because, the jury having found by their verdict that the other defendants were not guilty of conspiracy, no judgment could be entered against the railroad company. The same proposition was presented by motion for a rehearing. Both motions were overruled, and, upon appeal to the court of civil appeals of the first district, that court affirmed the judgment of the trial court.

The railroad company did not and could not actually participate in the act of expelling the defendant in error from the order, and can only be held liable for the results of that action by reason of the fact that it had entered into a conspiracy with the individual defendants named to procure some action by the Brotherhood against Thompson. The jury distinctly found for the defendants other than the railroad company, and thereby acquitted all other defendants from having entered into a conspiracy with the railroad company. There is no room for construction of this verdict, for it is expressed in plain language that the railroad company is the only guilty party defendant to the suit. Under the allegations in this case, the railroad company could not have accomplished the injury which was done to Thompson by its own action, but necessarily must have acted through other guilty parties. It therefore follows that an acquittal of all other

defendants acquitted the railroad company of the charge made against it. A conspiracy can not be formed by one person.

The gravamen of the action in this case is the injury done; that is, the wrongful expulsion of defendant in error from the order of the Brotherhood of Engineers. The railroad company could not have effected that act alone. It could only do it, as we have said before, by the action of its codefendants through a conspiracy entered into by and between the railroad company and the other defendants. The verdict of the jury in effect finds as to the other defendants that the expulsion was not wrongful or was not procured through the combination charged. Therefore the railroad company could not be guilty and all others innocent.

It is insisted with much earnestness by the attorneys of the defendants in error that the jury might have found all the parties guilty, and yet inflict the punishment upon one of them. Let us test the correctness of this proposition by writing the verdict so as to express the implied proposition of the defendants' counsel. Suppose the jury had said: "We, the jury, find for the plaintiff against the defendant railroad company, and also against the other defendants, but we assess the damages alone against the railroad company for \$2,500." Would the gentlemen contend for such a verdict, or would any court sustain such a discrimination? If it would not sustain it as written out, it can not sustain it as necessarily implied in the argument of the attorneys for the defendants in error.

It is insisted that suit might have been brought against the railroad company alone in this case. Grant that to be true (we do not intend to intimate to the contrary), the result would be the same, for, in order to recover against the railroad company, the same allegations and proof would be necessary to recover against it as is required in this case; i. e., it would be necessary for the plaintiff to prove the conspiracy between the parties, the unlawful action of other defendants in agreeing to carry it out, both as to making the charge and as to the action of the division, and, if plaintiff should fail to make such proof, he could not recover against the railroad company. If that company had been sued alone and the case submitted on special issues, and the jury had answered that the other defendants did not enter into the conspiracy, or that the expulsion was lawful, no judgment could be entered against the railroad company, although the jury should find against it. We conclude, therefore, that the court erred in giving the charge in answer to the request of the jury, and also erred in overruling the motion in arrest of judgment and the motion for a new trial, for which errors this case must be reversed.

The trial court erred, in submitting the issues in this case to the jury by using the following language: "Then, if you further find from the testimony that the writing of the Penniman letter [encouraging a suit for damages against the railway company] could not reasonably be considered a violation of plaintiff's obligation to the laws of the Brotherhood," etc. The court should have decided that question. If the members of the Brotherhood who tried Thompson, acting in good faith and in fairness towards Thompson, believed and held that the writing of the letter to Mrs. Penniman and the circumstances attending it did or did not constitute a violation of the constitution and laws of the order, that finding would be conclusive of the question. Whether or not the members of the order acted fairly

and in good faith towards Thompson in placing this construction upon the letter and the circumstances attending it was a question of fact for the jury, and was so submitted to them. If the members of division No. 201 of the Brotherhood of Locomotive Engineers in good faith fairly and honestly passed upon the testimony submitted to them, and found Thompson guilty of violating his obligation, or the constitution and laws of the order, then their action would be final and conclusive of the matter, and the plaintiff could not recover in this case because of his expulsion from that order, nor for any of the consequences flowing from it, although they may have found him guilty on the second charge also. If, however, the members of that order did not act in good faith, and did not exercise their honest judgment in coming to the conclusion that, by writing the Penniman letter, Thompson was guilty of a violation of his obligation, or the constitution and laws of the order, but used it as a pretext by which to expel him on account of the second charge made against him, then their action would be void, and Thompson would be entitled to recover.

The second charge, whereby Thompson was arraigned for having gone on the witness stand in the Bolton case and testified, did not furnish any ground for his expulsion from the order. If the Brotherhood of Locomotive Engineers had in their constitution or by-laws provided in so many words that a member who should testify in court in any case where he was called as a witness should be expelled, such provision would be a nullity, and would not be enforced in any court. If Thompson was wrongfully expelled through procurement of the Cotton Belt Railroad Company by a conspiracy and combination with other defendants named because he wrote the Penniman letter, or if he was expelled because he had done what was charged against him in the second specification alone, and not upon the first charge, then he would be entitled to recover against the railroad company, and against such of the other defendants as conspired and acted with it and against the order which expelled him for all damages which naturally flowed from such expulsion.

If the plaintiff shall be found entitled to recover against the defendants, his recovery should be for actual damages; that is, that sum of money which would compensate him for the pecuniary losses sustained by him as a result of his unlawful expulsion, and also such sum as would compensate him for the mental suffering and humiliation that was caused to him by reason of said expulsion and by reason of the publication of the same in the journal of the order. In this connection, we will say that the value of the insurance policy and traveling card alleged to have been forfeited by the expulsion would be the proper elements of actual damages to be assessed in his favor. If the defendants or either of them were actuated by malice in making the charges against Thompson, or in procuring the same to be made and in prosecuting the same before the order thereby procuring his expulsion, then the plaintiff may in the discretion of the jury recover exemplary damages against either or all of the said defendants in such sum as the jury may believe should be assessed against the said defendants or either of them. It is not necessary, as in case of actual damages recovered, that all of the defendants should be subjected to the same verdict because some

of the defendants may have acted without malice, but in combination with others, and as to such defendants there would be no right to recover exemplary damages.

It is contended that the plaintiff could not maintain this action because he did not appeal from the decision of P. M. Arthur, Grand Chief Engineer, to the Grand International Division, but this is not a proceeding to restore him to his membership. It is a suit for damages occasioned by his expulsion, and one in which his property rights, as well as personal rights, are involved. We are of opinion that it was not necessary for him to have prosecuted his appeal further than he did before instituting his suit for damages. (*Benson v. Screwmen's Ben. Ass'n*, 2 Tex. Civ. App. 66, 21 S. W. 562; *Bauer v. Sampson Lodge K. P.*, 102 Ind. 262, 1 N. E. 571.) On application for mandamus to restore plaintiff to membership, the court would not take jurisdiction until the applicant had exhausted his remedies under the laws of the Brotherhood. The same reason does not apply in a suit for damages. The right to apply to the courts for redress of such injuries as in this case exists in favor of all citizens, and could not be abridged by any association except by the consent of the member. The defendants have no ground upon which to stand in demanding that the remedy of appeal should be exhausted before they are called upon to repair the injury they have inflicted upon Thompson. The continuance of his membership in the Brotherhood does not concern the defendants.

The fact that Thompson testified as an expert when he was not or that he received pay for his testimony to which he was not entitled is irrelevant to any issue presented in this case. The charges upon which he was tried do not allege against him either the taking of improper fees or that he falsely represented himself as an expert. Therefore such evidence would not be admissible to support the finding and conclusion of the division No. 201 upon either one of the charges prosecuted before it.

It is therefore ordered that the judgments of the district court and court of civil appeals be reversed, and the cause remanded.

LABOR ORGANIZATIONS—STRIKES—LEGALITY—FINES ON MEMBERS—INTIMIDATION OF EMPLOYEES—EMPLOYERS' RIGHTS—INJUNCTION—*L. D. Willcutt and Sons Company v. Bricklayers' Benevolent and Protective Union No. 3 et al.*, *Supreme Judicial Court of Massachusetts*, 85 *Northeastern Reporter*, page 897.—The complainant company was engaged in the construction of buildings in the city of Boston. The defendants were certain individuals named as officers and members of two unincorporated associations of workmen and the other members of the associations as represented by the members named, thus bringing the whole membership properly before the court. (*Pickett v. Walsh*, 192 Mass. 572, 78 N. E. 753 [Bulletin No. 70, p. 747].) The company asked for an injunction to prevent the carrying out of a strike against them by the levying of fines on workmen who wished to continue in its employment after the strike had been de-

clared. The facts were reported by a justice of the superior court of Suffolk County, and the supreme court, by a divided bench, granted the injunction prayed for. Two judges dissented in an opinion of some length, and a third joined in the majority opinion only on the ground that the point in question had been determined by the decision in *Martell v. White*, 185 Mass. 255, 69 N. E. 1075 [Bulletin No. 53, p. 958]. The majority opinion contained a statement of the facts. It was delivered by Judge Hammond, and, on account of its very considerable interest, is reproduced quite fully. It is as follows:

The questions before us grew out of a trade dispute between the plaintiff and the members of the unions who were in its employ. In April, 1906, these unions adopted a code of working rules, in which, besides some minor demands not now material, they demanded that wages be increased five cents an hour, that all foremen should be members of the unions, that the business agent of the unions should be allowed to visit any building under construction to attend to his official duties, and that wages should be paid during working hours. The plaintiff declined to accept these rules, and a strike followed.

By the constitution and rules of the unions it appeared that a code of fines and penalties was established by the International Union, an association composed of these and other similar unions throughout the country, and that this code was being actively enforced by the local unions. One rule provided that any member violating any section of the working code should be fined upon conviction not less than \$5 nor more than \$25, one of these sections being that "no member of the union shall work with a nonunion man who refuses to join the union." Various other penalties were provided, varying from \$5 to \$500 for each offense, to be imposed upon persons designated as "common scabs," "inveterate or notorious scabs," and "union wreckers;" these terms being applied to those who in different ways persist in working after a strike has been called. These fines in their operation are likely to be coercive in their nature.

This code was actively enforced by the unions, and most of the members of the unions who left their work did so through fear of the fines that would be imposed upon them if they continued to work. The defendants Driscoll and Reagan on one occasion found two men at work for the plaintiff, one a journeyman who had been and the other a foreman who was a member of the union. Reagan threatened the journeyman with a fine of \$100 if he continued to work, and Driscoll notified the foreman that he was called out. Both refused to leave. Driscoll reported the fact at a meeting of the union and a vote was passed that charges be preferred against the men for working contrary to the rules. A preliminary injunction was issued in this case, and no further steps were taken under the vote.

The defendants established a strike headquarters, and provided a strike fund from which payments were made to the strikers and other men out of work. Some of the defendants made constant visits to a job of the plaintiff, generally at noontime, to persuade men whom the plaintiff had hired to leave its employ. They offered as inducements in some cases to nonunion men membership without the full payments usually required, and in other cases work else-

where. Men frequently left the plaintiff's employ after these talks, in some cases stating that they would like to work but could not run the risk of being fined. The defendant Driscoll induced two men to go who otherwise would have continued at work, by paying them with funds of the unions the wages due them from the plaintiff and providing them with transportation to Utica, N. Y., where he had secured other work for them.

The plaintiff was constructing other buildings at Fairhaven and at Andover, which were within the districts of other unions; and the union men employed by the plaintiff on those jobs also struck. It was found however that these men were not under the control of the defendants, though it did fairly appear that these strikes were a direct result of the strike in Boston, since all these unions were affiliated together in the International Union and all members of the unions were familiar with what should be done in such cases.

It was admitted that the defendants were not persons of financial responsibility, and the court found "that the acts of the defendants as above set forth were calculated to interfere and did interfere with the performance of the complainant's contracts for the construction of buildings, and had they continued, would have seriously embarrassed the complainant in the prosecution of its business, and that such consequences were contemplated by the defendants in their endeavor to force the complainant to accept their working rules to govern the management of its business."

As already stated, the strike had four objects. Of these the demand for an increase of wages was properly enforceable by a strike. The demand that wages should be paid during working hours amounts merely to a demand for a shorter day, and also was properly enforceable by a strike. The reasonableness of such demands we have not the means of determining; and it is settled that such matters are best left to be adjudicated in the freedom of private contract between the interested parties. More difficult questions are presented by the demands that all foremen shall be members of the unions, and that the business agent of the unions shall be allowed to visit any building under construction. (See as to the first of these points a very interesting article by Professor Smith, 20 *Harvard Law Review*, 431, note 1.) But it is unnecessary under the circumstances to determine these questions, as the plaintiff replied with a bare refusal of all the demands.

We are of opinion therefore that this strike must be regarded as simply a strike for higher wages and a shorter day. It was not a mere sympathetic strike, as in *Pickett v. Walsh*, 192 Mass. 572, 587, 78 N. E. 753 [Bulletin No. 70, p. 747], or one whose immediate object was only remotely connected with the ultimate object of the strikers, as in *Plant v. Woods*, 176 Mass. 492, 57 N. E. 1011 [Bulletin No. 31, p. 1294]. It was a direct strike by the defendants against the other party to the dispute, instituted for the protection and furtherance of the interests of the defendants in matters in which both parties were directly interested and as to which each party had the right, within all lawful limits, to determine its own course. Such a strike must be treated as a justifiable strike so far as respects its ultimate object.

But however justifiable or even laudable may be the ultimate objects of a strike, unlawful means must not be employed in carrying it

on; and it is contended by the plaintiff that the use of fines and threats of fines, under the circumstances disclosed in the record, are unlawful. The question is stated by the trial judge in the following language: "In case of a justifiable strike, has the contractor the right to invoke the aid of the court to prevent the labor union from imposing a fine [which the court has found to be coercive in its nature] or taking action to impose one upon one or more of its members under its rules to induce them to leave the contractor's employ to his injury?" Under the findings of the court it would seem that the question is not intended to be quite so broad as otherwise might be inferred from its language. The language is broad enough to include the case where the employee is under a contract to stay with his employer and where to leave would be a violation of that contract. But no such state of things appears upon the record. The plaintiff "hired its masons by the day and paid them on the basis of the number of hours worked, and it might have discharged them and they might have left at the close of any day." The question must therefore be considered as applying only to cases where the employee by leaving violates no contractual right of the employer.

The question how far the imposition of fines by an organization upon its members where the effect is to injure a third party is justifiable, was considered by this court in *Martell v. White*, 185 Mass. 255, 69 N. E. 1085 [Bulletin No. 53, p. 958], and it was there adjudged that the imposition of such a fine by which members of the organization were coerced into refusing to trade with the plaintiff, not a member, to his great damage, was inconsistent with the ground upon which the right to competition in trade is based, and as against him was not justifiable. In the course of the opinion the case of *Boutwell v. Marr*, 71 Vt. 1, 42 Atl. 607 [Bulletin No. 39, p. 501], was cited, in which the same conclusion was reached. In *Martell v. White*, five justices sat, and four of them, being a majority of the whole court, concurred in the ground upon which it was decided. The case was carefully presented by counsel, the questions involved were regarded as important, and there was a difference of opinion among the judges who sat in it. It was therefore considered at great length; and the conclusion was reached after a most exhaustive discussion and the most careful deliberation. It stands as a solemn adjudication by this court after such discussion and deliberation. So far as respects the trend of judicial opinion and authority there has been no change since the decision was announced unfavorable to it or to the ground upon which it was reached. On the contrary, so far as we are aware, whenever the case has been mentioned by members of the profession, whether they be judges engaged in the practical administration of the law, or professors teaching the students of our schools the true theory of its principles, it has been received with favorable comment. (See *Brennan v. Hatters of North America*, 73 N. J. Law 729, 65 Atl. 165 [Bulletin No. 70, p. 746]; *Allis-Chalmers Co. v. Iron Moulders' Union*, No. 125 (C. C.) 150 Fed. 155, 178 [Bulletin No. 70, p. 734]; 20 *Harvard Law Review*, 355, 356; 7 *Green Bag*, 210.) There is every reason why the doctrine of *stare decisis* should apply; and so far at least as respects this Commonwealth the case must be held as settling the correctness of the principle upon which the decision was based.

That principle, if applicable to the facts of this case, is decisive. The majority of the court are of the opinion that it is applicable, and hence that there should be a decree for the plaintiff enjoining intimidation or coercion by fines.

Before entering more fully upon the discussion it is well to get a clear conception of what the case is.

Shortly stated the case is this: The plaintiff's men are being coerced by threats of a fine to leave its employ, greatly to its injury, the fines to be levied in accordance with the by-laws of a voluntary association of which the proposed victims are members. This injury to the plaintiff is intended by the defendants. Has the plaintiff any standing in equity to an injunction against the infliction of such injury?

It is to be premised that the right which the plaintiff seeks to have protected against the acts of the defendants arises from no contract or statute, but out of the nature of things. It is one of the large body of rights which have their foundation in the fitting necessities of civilized society. It is the common law right to a reasonably free labor market. Vice Chancellor Stevenson, in speaking of it, says it has been called a "probable expectancy" and describes it as "the right which every man has to earn his living or pursue his trade without undue interference." *Jersey City Printing Co. v. Cassidy*, 63 N. J. Eq. 759, 53 Atl. 230 [Bulletin No. 45, p. 383].

This is the right—the right to a free labor market—which the plaintiff claims has been invaded by the defendants, and for which he seeks protection.

The defendants also have rights. They have the right to work or not to work, to sell their labor upon such terms as they see fit and to combine for the purpose of getting more pay or a shorter day. And for the purpose of strengthening their organization and making it more effective they have the right to make appropriate by-laws for its internal management, and for the regulation of the conduct of its members toward each other in matters affecting the general interests of the body; and they may enforce obedience to such by-laws and regulations by fines or other suitable penalties.

So long also as the by-laws of a union relate to matters in which no one is interested except the association and its members, and violate no right of a third party or no rule of public policy, they are valid. Fines may be imposed, for instance for tardiness, absence, failure to pay dues, or for misconduct affecting the organization or any of its members; and for numerous other acts. It can not be successfully contended, however, that as against the right of some party other than the association and its members an act, otherwise a violation of the third party's rights, is any less a violation because done by some member in obedience to a by-law.

There can be no doubt that fining is one method of injuring a man in his estate, and that a threat to fine is a threat of such an injury. Indeed this is recognized by the decree made by the trial court in this very case, so far as it affects Reagan, one of the defendants, who it was found had threatened with a fine a man once but not then a member of a union.

It is urged however that although this method of intimidation is generally an invasion of the employer's right to a free market and therefore illegal, yet when the intimidation is exerted by a union upon its members in accordance with its by-laws in a strike whose object is

legal, it is justifiable and legal. To this the obvious reply is that the rule of freedom to contract is founded upon principles of public policy, that each party to a contract is interested in the freedom of the other party, that it can make no difference to the public or to the employer (who in this case is the other party) that the person intimidated is or is not a member of the society intimidating. In either case the injury is the same and is from the same cause, namely intimidation. The workman is no longer free. In *Longshore Printing Co. v. Howell*, 26 Or. 527, 38 Pac. 547, the court, after speaking of the general right of labor unions to make rules, proceeds thus: "It must be understood, however, that these associations, like other voluntary societies, must depend for their membership upon the free and untrammelled choice of each individual member. No resort can be had to compulsory methods of any kind to increase or keep up or maintain such membership. Nor is it permissible for associations of this kind to enforce the observance of their laws, rules and regulations through violence, threats or intimidation, or to employ any methods that would induce intimidation or deprive persons of perfect freedom of action."

The keynote on this matter is struck in *Booth v. Burgess* (N. J. Ch.) 65 Atl. 226, 233, in the following language: "No surrender of liberty or voluntary agreement to abide by by-laws on the part of the employees who are first coerced, made by them when they enter their labor unions, can * * * affect the right of the complainant to a free market, which right he will enjoy for all it may be worth if these employees are permitted to exercise their liberty. The employees may be able to surrender their own right, but they certainly can not surrender the rights of other parties."

In considering this question we can not lose sight of the great power of organization. It should be taken into account when one is considering where the line should be drawn between the right of the employer to a free market and the right of workmen to interfere with that market by coercion through the rules of a labor union. It is not universally true that what one man may do any number of men by concerted action may do. In *Pickett v. Walsh*, 192 Mass. 572, 78 N. E. 753, 6 L. R. A. (N. S.) 1067, 116 Am. St. Rep. 272, Loring, J., after alluding to the great increase of power by combinations, says: "The result of this greater power of coercion on the part of a combination of individuals is that what is lawful for an individual is not the test of what is lawful for a combination of individuals, or to state it in another way, there are things which it is lawful for an individual to do which it is not lawful for a combination of individuals to do."

This organization of labor to better the condition of the laborer is natural and proper. There can be no doubt that it is the most effective way, perhaps the only effective way in which as against the organization of capital the rights of the laborer can be adequately protected. In many ways the labor unions have succeeded in bettering the condition of the laborer; and so far as their ultimate intentions and the means used in accomplishing them are legal they are entitled to protection to the extreme limit of the law.

But their powers must not be so far extended as to encroach upon the rights of others. It is clear that if the power to intimidate by fine be regarded as one of the powers which labor unions may right-

fully exercise, then the right to a free market for labor—nay, even the right of the laborer to be free—is seriously interfered with, to the injury both of the public and the employer as well as the laborer.

In view of these considerations and of others more fully set forth, in *Martell v. White*, which are not here repeated, and in *Boutwell v. Marr*, *ubi supra*, a majority of the court are of opinion that the overwhelming sense of the thing is that the principle that the right of the employer is not subject to coercion or intimidation by injury or threats of injury to the persons or property of laborers standing in the market to meet him, should apply to the coercion and intimidation exerted by labor unions upon their members by fines or threats of fines. Any other conclusion is inconsistent with the existence of a reasonably free labor market to which both the employer and the employee are entitled.

The result is that in the opinion of a majority of the court there should be a decree restraining and enjoining the defendants, their agents and servants from intimidating by the imposition of a fine, or by a threat of such fine, any person or persons from entering into the employ of the plaintiff or remaining therein, or from in any way being a party or privy to the imposition of any fine or threat of such imposition upon any person desiring to enter into or remain in the employ of the plaintiff; and it is so ordered.

LAWS OF VARIOUS STATES RELATING TO LABOR, ENACTED SINCE JANUARY 1, 1908.

[The Twenty-second Annual Report of this bureau contains all laws of the various States and Territories and of the United States relating to labor, in force January 1, 1908. Later enactments are reproduced in successive issues of the Bulletin, beginning with Bulletin No. 80, the issue of January, 1909. A cumulative index of these later enactments is to be found on page 195 of this issue.]

GEORGIA.

ACTS OF 1908.

ACT No. 321.—*Railroads—Employment of locomotive engineers.*

(Page 49.)

SECTION 1. No railway company operating trains in this State shall have employed or allow in charge of one of its locomotives in this State, as a locomotive engineer, (except such engines used in yard service) any person who shall not have had as much as three years actual bona fide experience as a fireman or engineer on a railway locomotive, or who shall not have served an apprenticeship of four years in a regular railroad machine shop, and have had in addition thereto one year bona fide experience as a locomotive fireman.

SEC. 2. Any railway company violating this act shall be guilty of a misdemeanor and liable to indictment and punishment in any county in this State in which such inexperienced person shall be allowed to work upon such locomotive.

Approved July 23, 1908.

ACT No. 537.—*Railroads—Headlights on locomotives.*

(Page 50.)

SECTION 1. All railroad companies are hereby required to equip and maintain each and every locomotive used by such company to run on its main line after dark with a good and sufficient headlight which shall consume not less than three hundred watts at the arc, and with a reflector not less than twenty-three inches in diameter, and to keep the same in good condition. The word main line as used herein means all portions of the railway line not used solely as yards, spurs and side tracks.

SEC. 2. Any railroad company violating this act in any respect shall be liable to indictment as for a misdemeanor in any county in which the locomotive not so equipped and maintained may run, and on conviction shall be punished by fine as prescribed in section 1039, of the Code of 1895.

SEC. 3. This act shall go into effect July 1, 1909.

SEC. 4. Provided this act shall not apply to tramroads, mill roads and roads engaged principally in lumber or logging transportation in connection with mills.

Approved August 17, 1908.

KENTUCKY.

ACTS OF 1908.

CHAPTER 59.—*Mine regulations—Inspectors.*

SECTION 1. The governor of this Commonwealth is hereby authorized and directed to appoint two additional assistant inspectors of mines, who shall hold the office for four years and until their successors are appointed and qualified. Said assistants shall have a thorough knowledge of the different systems of

working and ventilating coal mines and of the nature and properties of mine gases, especially explosive gases and dust, and shall have a thorough and practical knowledge of mining gained by at least five years experience at and in coal mines. Said assistant inspectors, before entering upon the discharge of their official duties, shall be sworn to discharge those duties faithfully and impartially and to the best of their skill and ability, which oath shall be certified by the officer administering it, and said certificate shall be filed with the secretary of state in his office, and each of said assistants shall give bond in the sum of two thousand dollars, with surety to be approved by the governor, for the faithful discharge of his official duties. Each of said assistants shall give his entire time and attention to the duties of his office, which shall consist of aiding, under the direction of the chief inspector of mines, in carrying out and enforcing the provisions of the laws relating to the inspection of mines. He shall keep a record of all inspections made by him and shall make monthly reports of the same to the chief inspector and he shall at all times in all things pertaining to the duties of his office be subject to the orders of the chief inspector. No assistant inspector shall be interested in operating any mine in this State and each shall be liable to dismissal for willful neglect of duty, for misconduct, or malfeasance in office. Each assistant inspector shall receive an annual salary of twelve hundred dollars, payable monthly, and shall likewise be allowed and paid his necessary traveling and other expenses incurred on account of and when engaged in the discharge of his official duties.

But before any person or persons shall be appointed as such assistant mine inspector he shall be required to pass a satisfactory examination before the board of examiners hereinafter named and shall be required to obtain from such board of examiners a certificate duly signed by the members thereof certifying to the governor that said applicant possesses all of the qualifications hereinbefore mentioned.

SEC. 2. The chief inspector of mines and any two of his assistants shall constitute a board of examiners for the examination of applicants for certificates of qualification to serve as foreman in coal mines, said two assistants to be designated and called into service at any time by the said chief inspector; and said chief inspector may on any occasion call any two assistant inspectors he may choose to act upon said board for such purpose, and at any time when his duty as chief inspector of mines necessitates his absence from the examination of applicants, such applicants may be examined by any two assistant inspectors which the chief inspector may designate: *Provided*, He shall be careful to designate only such assistants as examiners in his absence as he shall know to be thoroughly equipped and qualified to act as such examiners. Said board shall meet at such times and places as the chief inspector of mines shall from time to time order, and for their services as examiners they shall receive no extra compensation, but only the salary and traveling expenses as now provided by law, that is, their services as examiners shall be reckoned and in fact shall be considered and treated as part of the duties of their office.

SEC. 3. Six months after this act goes into effect, no owner, lessee, or operator of a coal mine in which as many as ten persons are employed at one time shall employ as mine foreman any person who has not been granted a certificate of qualification to the effect that he has been examined by the board of examiners provided for in the preceding section of this act and has been found fit and competent as herein required; and said board of examiners shall in no event grant any certificate to any person who does not satisfy said board that he is a person of good moral character and of his sobriety, and that he possesses a thorough knowledge of the different systems of working and ventilating coal mines and of the nature and properties of mine gases, dust and fire damp, and shall have a thorough and practical knowledge of mining gained by at least five years' experience in and at mines: *Except and provided*, That any person who for four years prior to the passage of this act has served as mine foreman or assistant mine foreman in coal mines may upon application therefor and upon satisfactory evidence presented to said board of examiners as to his term of service and as to his character for morality and sobriety, be granted a certificate of qualification without such examination, which certificate shall be known as a "service certificate" and shall be so designated on its face. Each applicant for examination shall, before he is examined, pay a fee of two dollars and fifty cents to the auditor of public accounts, who shall issue his receipt therefor, which receipt the applicant shall present to the chief inspector of mines or to such member of the board as may at any time be designated to receive the same, and each applicant for a "service certificate" shall likewise pay a fee

of two dollars and fifty cents to the auditor of public accounts and shall likewise present the auditor's receipt before such certificate may be issued to him; and all fees so paid shall be turned into the treasury to the credit of the general-expenditure fund. The chief inspector shall keep a record of all proceedings of the board, including the names and addresses of persons who apply for examination or for "service certificates," and of the certificates that have been granted; and the board is hereby authorized to cancel any certificate upon satisfactory evidence that the person to whom it has been issued has been guilty of violating instructions to comply with the requirements of the mining laws, or who has proven inefficient. The certificate to be granted to applicants who pass the examination herein provided for, shall in substance state that the applicant has been examined under the provisions of this act and has been found to possess the qualifications required by law. The chief inspector shall formulate the necessary blank certificates and cause same to be printed by the public printer in such quantities as may be needed from time to time.

SEC. 4. In all coal mines in this State in which as many as ten persons are usually employed at one time, wherein explosive gases are known to generate or exist in dangerous quantities, or coal dust is known to accumulate or exist in dangerous quantities, the owner, lessee or operator shall, when so ordered by the chief inspector of mines, or by an assistant inspector of mines, when approved by the chief inspector, employ and keep a sufficient number of practical and experienced men, to be known and designated as "shot firers" whose exclusive duty it shall be to set off and discharge the shots in all blasting in the workings of the said mines, but no "shot firer" shall fire any shot which in his judgment, after due inspection, shall not be a workmanlike and practical shot.

SEC. 5. Said shot firers shall immediately after the completion of their work post a notice in a conspicuous place at the mines in which shall be indicated the number of shots fired also the number of shots they did not fire, if any, specifying the number of the room and the designation of the entry, and give their reasons for not firing the same. The owner or operator of said mines shall provide reasonable and proper means for posting said notice. Said "shot firers" shall also keep a daily permanent record in a book, to be furnished them by said owner or operator, in which they shall enter the number of shots or blasts fired, the number of shots or blasts failing to explode, the number of "blown-out" shots, and the number of shots or blasts that in their judgment were not properly prepared and which they refused to fire, giving their reasons for the same. Said records shall be in the custody of the mine manager or superintendent and shall be available to inspection at all reasonable times by parties interested, and shall be open for inspection by the chief inspector of mines and the assistant inspectors. Said "shot firers" shall be treated and considered as employees and agents of said owner or operator.

SEC. 6. Said "shot firers" shall not do any blasting or exploding of shots or firing whatever until each and every miner and employee is out of the mine, except said "shot firers," mine superintendent, mine manager, mine foreman, and the person or persons necessarily employed in charge of pumps and stables in said mines, and any person in said mine, whose duty it is to go out of said mine before said firing, blasting and exploding takes place under the provisions of this act who willfully fails or refuses to go out of said mine as herein provided shall be fined in any sum not exceeding fifty dollars in the discretion of the court or jury.

SEC. 7. Each owner, lessee or operator of every mine to which the mining laws of the State apply, shall provide and furnish to the miners employed in said mine a sufficient number of caps and props, said props to be sawed square at each end, to be used by said miners in securing the roof in their rooms, and at such other working places where by law or custom of those usually engaged in such employment it is the duty of said miners to keep the roof propped, after the miner has selected and worked the same.

SEC. 8. Except as herein otherwise provided, any willful neglect or failure or refusal of any owner, lessee, or operator of a coal mine, or of any person employed in such mine, to comply with the provisions of this act affecting such owner, lessee, operator, or person, or any attempt to obstruct or interfere with any person in the discharge of the duties imposed upon such person, shall be deemed a misdemeanor, punishable by a fine of not less than one hundred dollars and not more than two hundred dollars.

Approved March 20, 1908.

CHAPTER 63.—*Mines—Investigation of gases, etc.*

SECTION 5. * * * As a contribution toward a better knowledge of the requirements for the safe working of the mines of the State, the technological work of the [state geological, topographical, and agricultural] survey shall include an investigation of mines, gases and coal dusts and of such other matters as are appropriate, to such extent as the means of the survey may permit

Approved March 25, 1908.

CHAPTER 66.—*Employment of children—Age limit—Inspection of factories.*

SECTION 1. No child under fourteen years of age shall be employed, permitted or suffered to work in or in connection with any factory, workshop, mine, mercantile establishment, store, business office, telegraph office, restaurant, hotel, apartment house or in the distribution or transmission of merchandise or messages. It shall be unlawful for any person, firm or corporation to employ any child under fourteen years of age in any business or service whatever, during any part of the term during which the public schools of the district in which the child resides are in session.

SEC. 2. No child between fourteen and sixteen years of age shall be employed, permitted or suffered to work in any factory, workshop, mine, or mercantile establishment, unless the person or corporation employing him procures and keeps on file and accessible to the truant officers of the town or city, and to the labor inspector, an employment certificate as hereinafter prescribed, and keep two complete lists of all such children employed therein, one on file and one conspicuously posted near the principal entrance of the building in which such children are employed. On termination of the employment of a child so registered, and whose certificate is so filed, such certificate shall forthwith be surrendered by the employer to the child or its parent or guardian or custodian. The labor inspector may make demands on an employer in whose establishment a child apparently under the age of sixteen years is employed or permitted or suffered to work, and whose employment certificate is not then filed as required by this act, that such employer shall either furnish him within ten days, evidence satisfactory to him that such child is in fact over sixteen years of age, or shall cease to employ, or permit or suffer such child to work therein. The labor inspector may require from such employer the same evidence of age of such child as is required on the issuance of an employment certificate, and the employer furnishing such evidence shall not be required to furnish any further evidence of the age of the child. In case such employer shall fail to produce and deliver to the inspector within ten days after such demand such evidence of age herein required of him, and thereafter continue to employ such child, or permit or suffer such child to work in such establishment, proof of the giving of such notice and of such failure to produce and file such evidence shall be prima facie evidence in any prosecution brought for violation of the provision that such child is under sixteen years of age and is unlawfully employed.

SEC. 3. An employment certificate shall only be approved by the superintendent of schools or by a person authorized by him in writing, or, where there is no superintendent of schools, by a person authorized by the school board: *Provided*, That no member of a school board or other person authorized as aforesaid shall have authority to approve such certificate for any child then in or about to enter his own employment, or the employment of a firm or corporation of which he is a member, officer or employee.

SEC. 4. The persons authorized to issue employment certificates shall not issue such certificates until he has received, examined, approved, and filed the following papers duly executed: (1) The school record of such child properly filled out and signed as provided herein below. (2) A passport or duly attested transcript of the certificate of birth or baptism or other religious record, showing the date and place of birth of such child. A duly attested transcript of the birth certificate filed according to law with any officer charged with the duty of recording births, shall be sufficient evidence of the age of such child. (3) The affidavit of the parent, guardian or custodian of a child, which shall be required, however, only in case such last-mentioned transcript of the certificate of birth be not produced and filed, showing the place and date of birth of such child; which affidavit must be taken before the officer issuing employment certificates, who is hereby authorized and required to administer such oath, and who shall not demand or receive a fee therefor. Such employment certificate shall not be issued until such child has personally

appeared before and been examined by the officer issuing the certificates, and until such officer shall, after making examination, file and sign in his office a statement that the child can read and legibly write simple sentences in the English language and that in his opinion the child is fourteen years of age or upward and has reached the normal development of a child of its age, and is in sound health and is physically able to perform the work which it intends to do. In doubtful cases such physical fitness shall be determined by a medical officer of the board or department of health, or by the county physician. Every employment certificate shall be signed in the presence of the child in whose name it is issued.

SEC. 5. Such certificate shall state the date and place of birth of the child, and describe the color of the hair and eyes, the height and weight and any distinguishing facial marks of such child, and that the papers required by the preceding section have been duly examined, approved and filed and that the child named in such certificate has appeared before the officer signing the certificate and has been examined.

SEC. 6. The school record above mentioned shall be signed by the principal or chief teacher of the school which such child has last attended and shall be furnished, on demand, to a child entitled thereto. It shall contain a statement certifying that the child has regularly attended the public schools or schools equivalent thereto or parochial schools for not less than one hundred days during the school year previous to his arriving at the age of fourteen years or during the year previous to applying for such school records, and is able to read and write simple sentences in the English language, and has received during such period instruction in reading, spelling, writing and geography and is familiar with the fundamental operations of arithmetic up to and including common fractions. Such school record shall also give the age and residence of the child, as shown on the records of the school and the name of its parent, or guardian or custodian: *Provided*, That upon the filing with the person authorized to issue employment certificates of the affidavit of the applicant or of his or her parent, guardian or custodian, showing that diligent effort has been made to obtain the school record hereby required and that it can not be obtained, then the person authorized to issue the certificate may issue such a certificate without having received such school record, but it shall be his duty, in such case, to examine the applicant as to his or her proficiency in each of the studies mentioned in this section; and in such case the employment certificate shall show that such examination was had in lieu of the filing of the school record.

SEC. 7. The local board of education or the school board of a city, town or district, as the case may be, shall transmit between the first and tenth of each month, to the office of the labor inspector, a list of the names of the children to whom certificates have been issued during the previous month.

SEC. 8. No person under the age of sixteen years shall be employed or suffered or permitted to work at any gainful occupation more than sixty hours in any one week, not [sic] nor more than ten hours in any one day; or before the hour of seven o'clock in the morning or after the hour of seven in the evening. Every employer shall post in a conspicuous place in every room where such minors are employed a printed notice, stating the hours required of them each day of the week, the hours of commencing and stopping work and the hours when the time or times allowed for dinner or for other meals begin and end. The printed form of such notice shall be furnished by the state labor inspector, and the employment of any minor for longer time in any day so stated shall be deemed a violation of this section.

SEC. 9. Whoever employs a child under sixteen years of age, and whoever having under his control a child under such age permits such child to be employed in violation of section one, two or eight of this act, shall, for such offense, be fined not more than fifty dollars, and whoever continues to employ any child in violation of either of said sections of this act after being notified by a truant officer or a labor inspector thereof, shall for every day thereafter that such employment continues, be fined not less than five nor more than twenty dollars. A failure to produce to a truant officer or labor inspector any employment certificate or list required by this act shall be prima facie evidence of the illegal employment of any person whose employment certificate is not produced, or whose name is not so listed. Any corporation or employer retaining employment certificates in violation of section two of this act shall be fined ten dollars. Every person authorized to sign the certificate prescribed by

section five of this act, who knowingly certifies to any materially false statement therein shall be fined not more than fifty dollars, nor less than ten dollars.

SEC. 10. Truant officers may visit the factories, workshops, mines, and mercantile establishments in their several towns and cities and ascertain whether any minors are employed therein contrary to the provisions of this act, and they shall report any cases of such illegal employment to the superintendent of schools and to the labor inspector. Labor inspectors and truant officers may require that the employment certificates and lists provided for in this act, of minors employed in such factories, workshops, mines or mercantile establishments, shall be produced for their inspection. Complaints for offenses under this act shall be brought by the labor inspectors.

SEC. 11. No child under the age of sixteen years shall be employed at sewing belts, or to assist in sewing belts, in any capacity whatever, nor shall any child adjust any belt to any machinery; they shall not oil or assist in oiling, wiping or cleaning machinery; they shall not operate, or assist in operating circular or band saws, wood shapers, wood joiners, planers, sandpaper or wood-polishing machinery, emery or polishing wheels used for polishing sheet metal, wood turning or boring machinery, stamping machines in sheet-metal and tinware manufacturing, stamping machines in washer and nut factories, operating corrugating rolls, such as are used in roofing factories, nor shall they be employed in operating any steam boiler, steam machinery, or other steam-generating apparatus, or as pin boys in any bowling alley; they shall not operate or assist in operating dough brakes, or cracker machinery of any description, wire or iron straightening machinery, nor shall they operate or assist in operating rolling-mill machinery, punches or shears, washing, or grinding or mixing mills, or calendar rolls in rubber manufacturing, nor shall they operate or assist in operating laundry machinery, nor shall such children be employed in any capacity in preparing any composition in which dangerous or poisonous acids are used, and they shall not be employed in any capacity in the manufacture of paints, colors or white lead, nor shall they be employed in any capacity whatever in operating or assisting to operate any passenger or freight elevator, nor shall they be employed in any capacity whatever in the manufacture of goods for immoral purposes, nor in any theatre, concert hall, or place of amusement wherein intoxicating liquors are sold, nor shall females under sixteen years of age be employed in any capacity where such employment compels them to remain standing constantly. Nor shall any child under sixteen years of age be employed at any occupation dangerous or injurious to health or morals, or to lives or limbs, and as to these matters, the decision of the county physician or city health officer, as the case may be, shall be final.

SEC. 12. It shall be the duty of the owner of any manufacturing establishment, where any person under sixteen years of age is employed, his agents, superintendents or other persons in charge of same, to furnish and supply, when practicable, or cause to be furnished and supplied to him, belt shifters or other safe mechanical contrivance for the purpose of throwing belts on or off pulleys; and, whenever practicable, machinery therein shall be provided with loose belts. All vats, pans, saws, planes, cogs, gearing, belting, set screws and machinery of every description therein, which is palpably dangerous, where practicable, shall be properly guarded; and no person shall remove or make ineffective any safeguard around or attached to any planer, saw, belting, shafting or other machinery, or around any vat or pan, while the same is in use, unless for the purpose of immediately making repairs thereto, and all such safeguards shall be promptly replaced. No person under eighteen years of age shall be allowed to clean machinery while in motion.

SEC. 13. Suitable and proper wash rooms and water-closets shall be provided in each manufacturing establishment, where any person under sixteen years of age is employed, and such water-closets shall be properly screened and ventilated and be kept at all times in a clean condition; and if girls under sixteen years of age be employed in any such establishment, the water-closet shall have separate approaches and be kept separate and apart from those used by men. All closets shall be kept free from obscene writing and marking. A dressing room shall be provided for such girls when the nature of their work is such as to require any change of clothing.

SEC. 14. Every person, firm, corporation, association, individual or partnership employing girls under sixteen years of age in any manufacturing, mechanical or mercantile industry, laundry, workshop, renovating works, or printing offices in this Commonwealth, shall provide seats for the use of the girls so

employed, and shall permit the use of such by them when not necessarily engaged in the active duties for which they are employed.

Sec. 15. The walls and ceilings of each room in every manufacturing establishment where any person under sixteen years of age is employed shall be lime-washed or painted, when, in the opinion of the labor inspector, it shall be conducive to the health or cleanliness of the persons working therein.

Sec. 16. Grand juries shall have inquisitorial powers to investigate violations of this act; also shall county judges and circuit judges, and judges of the circuit courts of the State shall specially charge the grand jury at the beginning of each term of the court to investigate violations of this act.

Sec. 17. A copy of this act shall be conspicuously posted and kept in each workroom of every manufacturing establishment, mill, mine or workshop or mercantile or printing establishment, theater, bowling alley, telegraph, telephone or public messenger company or laundry in this Commonwealth.

Sec. 18. Any adult person who violates any of the provisions of this act or who suffers or permits any child to be employed in violation of its provisions, shall be deemed guilty of a misdemeanor, and on conviction, unless otherwise herein expressly provided shall be punished by a fine of not more than fifty dollars and not less than twenty-five dollars for the first offense, and for each subsequent offense by imprisonment for not more than ninety days and not less than ten days, or by a fine of not less than fifty dollars nor more than two hundred dollars, or by both fine and imprisonment.

Sec. 19. Whereas there are many children between the ages of fourteen and sixteen now in employments for which an employment certificate is required by this act; now, therefore, in order to provide ample time for compliance herewith by obtaining the proof of birth and the school record herein required, it is hereby enacted that the provisions of this act as to the requirement of an employment certificate shall not go into effect until the first day of September, nineteen hundred and eight.

And whereas there are some children between the ages of fourteen and sixteen who are now in employments for which an employment certificate is required by this act, who can not comply with the educational test established by this act and who would find it a real hardship to be thus expelled from their employment without a full opportunity to prepare themselves for that test; now, therefore, it is hereby enacted that the requirement of the filing of a school record, or of mental examination in default thereof, as a prerequisite to the issuance of an employment certificate, shall not be effective until the first day of September, nineteen hundred and nine; but from the first day of September, 1908, to the first day of September, 1909, employment certificates shall be issued to children between the ages of fourteen and sixteen years upon the proof of the birth and of physical fitness required by section three hereof.

Approved March 18, 1908.

MARYLAND.

ACTS OF 1908.

CHAPTER 724.—*Railroads—Crews for freight trains.*

(Page 71.)

SECTION 1. Article 23 of the Code of Public General Laws of Maryland of 1904 is hereby amended by adding thereto certain sections to follow section 300 of said article, to be known as sections 300k, 300l, 300m, 300n and 300p.

Sec. 300k. It shall be unlawful for any railroad company doing business in the State of Maryland or any receiver of such railroad company to run or operate over its road or any part of its road, or suffer or permit to be run or operated over its road or any part of its road, any freight train consisting of thirty or more freight or other cars, exclusive of caboose and locomotive, with less than a full train crew, consisting of six persons, to wit: One engineer, one fireman, one conductor, one flagman and two brakemen.

Sec. 300l. Any such railroad company or any such receiver violating any of the provisions of sections [sic] 300k of this act shall be liable to a penalty of five hundred dollars for each and every such violation, to be recovered in a civil suit or suits to be brought by the attorney-general of the State of Maryland in the name of this State; and it shall be the duty of such attorney-general without further authorization to bring such suit or suits upon duly verified informa-

tion being presented to or lodged with him of such violation having occurred, and the affidavits of at least two citizens of the State of Maryland that such violation has occurred shall be taken and deemed to be duly verified information for the purposes of this act.

Sec. 300m. It shall be the duty of the attorney-general of the State of Maryland to enforce the provisions of sections 300k and 300l of this act, and all powers granted to the said attorney-general for the enforcement of any other act or acts are hereby granted to him for the purpose of the enforcement of said provisions of this act.

Sec. 300n. Any employee of such railroad company or of any such receiver who may be killed or injured by any train which was run or operated contrary to the provisions of section 300k of this act, or who may be killed or injured as a result of any act of any person employed contrary to the provisions of section 300k of this act shall not be deemed thereby to have assumed the risk thereby occasioned, although continuing in the employment of such railroad company or of such receiver, after the unlawful running or operating of such train or the unlawful employment of such person has been brought to his knowledge; nor shall any such employee be held to have contributed to his death or injury in any case where such railroad company or such receiver shall have violated any of the provisions of section 300k of this act when such violation contributed to the deaths [sic] or injury of such employee; and all questions of negligence, or either or both, arising in cases brought under or by virtue of said section of this act shall be for the jury.

Sec. 300p. The invalidity of any portion of this act shall not affect the validity of any portion thereof which can be given effect without such invalid part.

Approved April 8, 1908.

CHAPTER 85.—Hours of labor of employecs on public works—Baltimore.

(Page 613.)

SECTION 1. The act of 1898, chapter 458, of the Code of Public Local Laws, relating to the hours of labor of mechanics and laborers upon city work, is hereby repealed and reenacted to read as follows:

Section 2. Eight hours shall constitute a day's work for all laborers, workmen or mechanics, who may be employed by or on behalf of the mayor and city council of Baltimore, except in cases of extraordinary emergency, which may arise in time of war or in cases where it may be necessary to work more than eight hours per calendar day, for the protection of property or human life: *Provided*, That in all such cases the laborer, workman or mechanic so employed and working to exceed eight hours per calendar day shall be paid on the basis of eight hours constituting a day's work: *Provided further*, That not less than the current rate of per diem wages in the locality where the work is performed shall be paid to laborers, workmen and mechanics so employed by or on behalf of the mayor and city council of Baltimore; and laborers, workmen or mechanics employed by contractors or subcontractors in the execution of any contract or contracts within the city of Baltimore on any public work, shall be deemed to be employed by or on behalf of the mayor and city council of Baltimore.

Sec. 3. All contracts hereafter made by or on behalf of the mayor and city council of Baltimore with any person or persons or corporation, for the performance of any work with the city of Baltimore, shall be deemed and considered as made upon the basis of eight hours constituting a day's work, and it shall be unlawful for any such person or persons, or corporation to require or permit any laborer, workman or mechanic to work more than eight hours per calendar day in doing such work, except in the cases and upon the conditions provided in section 2 of this act.

Sec. 4. Any officer of the mayor and city council of Baltimore, or any person acting under or for such officer, or any contractor or subcontractor or other person acting for them, violating any of the provisions of this act, shall for each and every offense be fined not less than ten dollars nor more than fifty dollars for each and every offense, one-half of such fine to go to the informer, said fines to be collected as other fines are collected by law.

Sec. 5. The provisions of this act shall not apply to the employees of the fire department, Bay View Asylum or the Baltimore City Jail.

Approved March 12, 1908.

CUMULATIVE INDEX OF LABOR LAWS AND DECISIONS RELATING THERE TO.

[This index will include all labor laws enacted since January 1, 1908, as they appear in successive issues of the Bulletin, beginning with Bulletin No. 80, the issue of January, 1909. Laws enacted previously appear in the Twenty-second Annual Report of the Commissioner of Labor. The decisions indexed under the various headings relate to the laws on the same subjects without regard to their date of enactment and are indicated by the letter "D" in parenthesis following the name of the State.]

	Bulletin.			Bulletin.	
	No.	Page.		No.	Page.
Antitrust act:			Hours of labor on public works:		
United States (D).....	80	124-128	Maryland	80	194
Children employed, certificates, registers, etc., of:			New York (D).....	80	150-155
Kentucky	80	190-192	Inspection of factories and work-shops:		
Children, employment of, age limit for:			Kentucky	80	192, 198
Kentucky	80	190-193	Inspectors, mine:		
New York (D).....	80	143, 144	Kentucky	80	187, 188
Pennsylvania (D).....	80	142, 143	Intimidation of employees:		
Children, employment of, general provisions for:			Missouri (D).....	80	155-161
Kentucky	80	190-198	Kentucky, 1908.....	50	187-193
Children, employment of, in certain occupations forbidden:			Maryland, 1908.....	80	198, 194
Kentucky	80	192	Mine gases, etc., investigation of:		
Children, employment of, to clean moving machinery:			Kentucky	80	190
Pennsylvania (D).....	80	142, 143	Mine inspectors. (See Inspectors, mine.)		
Children, hours of labor of:			Mine regulations:		
Kentucky	80	191	Kentucky	80	187-190
Children, illiterate, employment of:			Miners, etc., examination of. (See Examination, etc.)		
Kentucky	80	190, 191	Public works, hours of labor on. (See Hours of labor, etc.)		
Children, night work by:			Railroad employees, qualifications of. (See Examination, etc., of railroad employees.)		
Kentucky	80	191	Railroad trains, sufficient crews required on:		
Eight-hour day:			Maryland	80	193, 194
Maryland	80	194	Railroads, competent men to be employed on. (See Examination, etc., of railroad employees.)		
New York (D).....	80	150-155	Railroads, hours of labor of employees on. (See Hours of labor, etc.)		
Employees, examination, etc., of. (See Examination, etc.)			Railroads, safety appliances on:		
Employment of children. (See Children, employment of.)			Georgia	80	187
Examination, etc., of miners, mine foreman, etc.:			Safety appliances. (See Guards on dangerous machinery; Inspection of factories; Railroads, safety appliances on.)		
Kentucky	80	188, 189	Seats for employees:		
Examination, etc., of railroad employees:			Kentucky	80	192, 193
Georgia	80	187	Toilet rooms, etc., for employees:		
Experienced men to be employed. (See Examination, etc.)			Kentucky	80	192
Factory regulations. (See Inspection of factories.)			Ventilation, etc., of mines. (See Mine regulations.)		
Georgia, 1908.....	80	187			
Guards for dangerous machinery:					
Kentucky	80	192			
Hours of labor of employees on railroads:					
Missouri (D).....	80	144-146			
Wisconsin (D).....	80	146-150			

INDEX TO BULLETIN NO. 80.

	Page.
Accidents, industrial, in—	
Canada, 1906	97
Great Britain, 1907	102
Arbitration and conciliation in Canada, 1906-7	96
Bavaria, cooperative societies in, report of Bavarian Statistical Bureau on	98-100
Canada:	
Conciliation and arbitration in, 1906-7	96
Fair wages schedules in, 1906-7	96, 97
Industrial accidents in, 1906	97
Labor disputes in, 1906	97
Labor unions in, 1904 to 1906	96
Child and woman wage-earners in Great Britain. (<i>See</i> Woman and child wage-earners in Great Britain.)	
Child-labor law and its enforcement in Maryland, 1907	89
Children and women, employment of, in Great Britain, social and economic effect of legislation regulating	47
Children and women, wages of, in Great Britain, influence of factory acts upon	53-65
Children, employment of, outside of factories and workshops in Great Britain	23-27
Children, street trading by, in Great Britain	27-36
Children, women, and men, distribution of employment among, in Great Britain, influence of factory acts upon	65-71
Clothing and other manufactures, inspection of, in Maryland, 1907	89, 90
Compensation for industrial diseases in Great Britain	103, 104
Conciliation and arbitration in Canada, 1906-7	96
Cooperative societies in Bavaria, report of Bavarian Statistical Bureau on	98-100
Cotton, woolen, and knitting mills in North Carolina, statistics of, 1907	84
Dangerous trades in Great Britain, establishments in	103
Decisions of courts affecting labor:	
Antitrust law—boycott as restraint of trade	124-138
Combinations to fix prices—restraint of trade—pools and trusts—construction and application of statute	138-142
Employer's liability—	
course of employment—eating lunch on premises	167, 168
course of employment—leaving place of work for personal ends	168, 169
railroad companies—negligence—contributory negligence—proximate cause	169-171
res ipsa loquitur—application of doctrine	171-173
Employment of children—	
age limit—cleaning moving machinery	142, 143
certificate of age—violation of statute—persons liable	143, 144
Employment of labor—	
enforcement of contract—restraint of trade—trade secrets	163-167
term—evidence—breach by employer—damages	173-176
Hours of labor of employees on railroads—state and federal statutes—regulation of commerce—constitutionality of statute	144-150
Hours of labor on public works—constitutionality of statute	150-155
Labor organizations—	
boycott—injunction—contempt—evidence—violation of antitrust law	124-138
boycott—use of mails to defraud	161-163
combinations to advance wages—nonapplicability of statute	138-142
procuring expulsion of members—conspiracy—liability of one party only—damages	176-180
rights—interference with employment—procuring discharge—damages—grounds—measure	155-161
strikes—legality—fines on members—intimidation—employers' rights—injunction	180-186
Trade secrets—contract to prevent disclosure—enforcement	163-167
Digest of recent foreign statistical publications:	
Canada	
Report of the Department of Labor of the Dominion of Canada for the fiscal year (9 months) ended March 31, 1907	96, 97
Germany	
Die Arbeits- und Lohnverhältnisse in der städtischen Betrieben 1906, Mittheilungen des Statistischen Amts der Stadt Magdeburg	100, 101
Die Eingetragenen Genossenschaften im Königreich Bayern. Nach dem Stande in den Jahren 1902 und 1903 und mit einer vorläufigen Übersicht über den Stand von Ende 1905	98-100
Great Britain—	
Annual Report of the Chief Inspector of Factories and Workshops for the year 1907	101-103
Compensation for Industrial Diseases, report on	103, 104
Report from the Select Committee on Home Work, August 8, 1907	104, 105
Report from the Select Committee on Home Work, July 22, 1908	105-110
The Wages Boards and Industrial Conciliation and Arbitration Acts of Australia and New Zealand	110, 111

Digest of recent foreign statistical publications—Concluded.

	Page.
Italy—	
La Donna nell' Industria Italiana.....	111-114
L'industria del Fiammiferi Fosforici in Italia e la Lotta contro il Fosforismo.....	114-116
Spain—	
Preparacion de las Bases para un Proyecto de Ley de Casas para Obreros. Casas baratas.....	116-123
Digest of recent reports of state bureaus of labor statistics:	
Illinois.....	88
Maryland.....	80-91
New Hampshire.....	91, 92
North Carolina.....	92-95
Disputes, labor, in Canada, 1904 to 1906.....	97
Employment—	
Conditions of, and wages of employees in Magdeburg.....	100, 101
Distribution of, among men, women, and children in Great Britain, influence of factory acts upon.....	65-71
Of children outside of factories and workshops in Great Britain.....	23-27
Of women and children in Great Britain, social and economic effect of legislation regulating.....	47
Of women in industry, Italy.....	111-114
Employment agency, free, in Maryland, operations of, 1907.....	90
Factories and workshops in Great Britain, report of chief inspector of, 1907.....	101-103
Factories in North Carolina, statistics of, in 1907:	
Furniture.....	94, 95
Miscellaneous.....	93, 94
Factory laws in Great Britain:	
Administration of.....	8-11
Discussion of provisions relating to women and children.....	1-7
Effect of provisions of, shortening hours of work.....	48-53
Influence of, upon distribution of employment among men, women, and children.....	65-71
Influence of, upon general welfare of workers.....	71-81
Influence of, upon industry.....	81-83
Influence of, upon wages of women and children.....	53-65
Proposed amendments to.....	11, 12
Factory workers, women, in Illinois, statistics of, 1906.....	88
Fair wages schedules in Canada, use of, 1906-7.....	96, 97
Farmers in North Carolina, condition of, 1907.....	92, 93
Free employment agency in Maryland, operations of, 1907.....	90
Furniture factories in North Carolina, statistics of, 1907.....	94, 95
Germany:	
Conditions of employment and the wages of employees in Magdeburg.....	100, 101
Cooperative societies in Bavaria, report of Bavarian Statistical Bureau on.....	98-100
Great Britain:	
Chief Inspector of Factories and Workshops, report of, for the year 1907.....	101-103
dangerous trades, establishments in.....	103
industrial accidents.....	102
industrial poisoning.....	102, 103
Compensation for industrial diseases.....	103, 104
Home work, reports of select committees on, in 1907 and 1908.....	104-110
Wages Boards and Industrial Conciliation and Arbitration Acts of Australia and New Zealand, report on, to the Home Department.....	110, 111
Half-time system in Great Britain.....	12-23
Home work in Great Britain, reports of select committees on, in 1907 and 1908.....	104-110
Hours of work, effect of provisions shortening, in Great Britain.....	48-53
Housing problem in Spain, report of the Spanish Institute of Social Reforms on.....	116-123
Illinois, working women in factories in, statistics of, 1906.....	88
Industrial accidents in—	
Canada, 1906.....	97
Great Britain, 1907.....	102
Industrial Conciliation and Arbitration Acts and Wages Boards of Australia and New Zealand, report on, to the Home Department of Great Britain.....	110, 111
Industrial diseases, compensation for, in Great Britain.....	103, 104
Industrial poisoning in Great Britain, 1907.....	102, 103
Industries, leading, in New Hampshire, statistics of, 1907.....	91
Industry, influence of factory acts upon, in Great Britain.....	81-83
Inspection of clothing and other manufactures in Maryland.....	89, 90
Italy:	
Employment of women in industry.....	111-114
Manufacture of sulphur matches.....	114-116
Labor disputes in Canada, 1906.....	97
Labor unions, statistics of, in—	
Canada, 1904 to 1906.....	96
Maryland, 1907.....	90, 91
Laws relating to labor. (See Cumulative Index of labor laws and decisions relating thereto, p. 195.)	
Magdeburg, conditions of employment and the wages of employees in.....	100, 101
Manufacture of sulphur matches in Italy.....	114-116
Manufactures, statistics of, in New Hampshire, 1907.....	91, 92
Maryland, statistics of, in 1907.....	80-91
Child-labor law and its enforcement.....	89
Free employment agency.....	90
Inspection of clothing and other manufactures.....	89, 90
Labor unions.....	90, 91
Strikes.....	91
Minimum Wage Act, 1908, New South Wales.....	86, 87
Minimum wage, outwork, and sweating in Great Britain.....	36-47

	Page.
New Hampshire, statistics of, in 1907.....	91, 92
Leading industries.....	91
Statistics of manufactures.....	91, 92
New South Wales Minimum Wage Act, 1908.....	86, 87
North Carolina, statistics of, in 1907.....	92-95
Cotton, woolen, and knitting mills.....	94
Farmers, condition of.....	92, 93
Furniture factories.....	94, 95
Miscellaneous factories.....	93, 94
Railroad employees.....	95
Trades, condition of.....	93
Outwork, sweating, and the minimum wage in Great Britain.....	36-47
Poisoning, industrial, in Great Britain, 1907.....	102, 103
Railroad employees in North Carolina, statistics of, 1907.....	95
Spain, the housing problem in, report of the Spanish Institute of Social Reforms on.....	116-123
Street trading by children in Great Britain.....	27-36
Strikes in Maryland, 1907.....	91
Sulphur matches, manufacture of, in Italy.....	114-116
Sweating, outwork, and the minimum wage in Great Britain.....	36-47
Trades, condition of, in North Carolina, 1907.....	93
Wage Act, Minimum, 1908, New South Wales.....	86, 87
Wage-earners, woman and child, in Great Britain. (<i>See</i> Woman and child wage-earners in Great Britain.)	
Wages Boards and Industrial Conciliation and Arbitration Acts of Australia and New Zealand, report on, to the Home Department of Great Britain.....	110, 111
Wages of employees and conditions of employment in Magdeburg.....	100, 101
Wages of women and children in Great Britain, influence of factory acts upon.....	53-65
Welfare, general, of workers in Great Britain, influence of factory acts upon.....	71-81
Woman and child wage-earners in Great Britain:	
Conclusions regarding condition of women and children.....	83-85
Employment of children outside of factories and workshops.....	23-27
Factory laws relating to women and children—	
administration of.....	8-11
discussion of provisions of.....	1-7
effect of provisions of, shortening hours of work.....	48-53
influence of, upon distribution of employment among men, women, and children.....	65-71
influence of, upon general welfare of workers.....	71-81
influence of, upon industry.....	81-83
influence of, upon wages of women and children.....	53-66
proposed amendments to.....	11, 12
Half-time system.....	12-23
Outwork, sweating, and the minimum wage.....	36-47
Social and economic effect of legislation regulating employment of women and children.....	47
Street trading by children.....	27-36
Women in industry, employment of, in Italy.....	111-114
Women working in factories in Illinois, statistics of.....	83
Woolen, cotton, and knitting mills in North Carolina, statistics of.....	94
Workers, general welfare of, in Great Britain, influence of factory acts upon.....	71-81
Working women in factories in Illinois, statistics of, 1906.....	83

DIRECTORY OF BUREAUS OF LABOR IN THE UNITED STATES AND IN FOREIGN COUNTRIES.

State.	Name of bureau.	Title of chief officer.	Location of bureau.
UNITED STATES.			
United States.....	United States Bureau of Labor.....	Commissioner.....	Washington, D. C.
California.....	Bureau of Labor Statistics.....	Commissioner.....	San Francisco, Cal.
Colorado.....	Bureau of Labor Statistics.....	Deputy Commissioner.....	Denver, Colo.
Connecticut.....	Bureau of Labor Statistics.....	Commissioner.....	Hartford, Conn.
Idaho.....	Bureau of Immigration, Labor, and Statistics.....	Commissioner.....	Boise, Idaho.
Illinois.....	Bureau of Labor Statistics.....	Secretary.....	Springfield, Ill.
Indiana.....	Bureau of Statistics.....	Chief.....	Indianapolis, Ind.
Iowa.....	Bureau of Labor Statistics.....	Commissioner.....	Des Moines, Iowa.
Kansas.....	Bureau of Labor Statistics.....	Commissioner.....	Topeka, Kans.
Kentucky.....	Department of Agriculture, Labor, and Statistics.....	Commissioner.....	Frankfort, Ky.
Louisiana.....	Bureau of Statistics of Labor.....	Commissioner.....	New Orleans, La.
Maine.....	Bureau of Labor Statistics.....	Commissioner.....	Augusta, Me.
Maryland.....	Bureau of Industrial Statistics.....	Chief.....	Baltimore, Md.
Massachusetts.....	Bureau of Statistics of Labor.....	Chief.....	Boston, Mass.
Michigan.....	Bureau of Labor and Industrial Statistics.....	Commissioner.....	Lansing, Mich.
Minnesota.....	Bureau of Labor.....	Commissioner.....	St. Paul, Minn.
Missouri.....	Bureau of Labor Statistics and Inspection.....	Commissioner.....	Jefferson City, Mo.
Montana.....	Bureau of Agriculture, Labor, and Industry.....	Commissioner.....	Helena, Mont.
Nebraska.....	Bureau of Labor and Industrial Statistics.....	Deputy Commissioner.....	Lincoln, Nebr.
New Hampshire.....	Bureau of Labor.....	Commissioner.....	Concord, N. H.
New Jersey.....	Bureau of Statistics of Labor and Industries.....	Chief.....	Trenton, N. J.
New York.....	Department of Labor.....	Commissioner.....	Albany, N. Y.
North Carolina.....	Bureau of Labor Statistics and Printing.....	Commissioner.....	Raleigh, N. C.
North Dakota.....	Department of Agriculture and Labor.....	Commissioner.....	Bismarck, N. Dak.
Ohio.....	Bureau of Labor Statistics.....	Commissioner.....	Columbus, Ohio.
Oklahoma.....	Department of Labor.....	Commissioner.....	Guthrie, Okla.
Oregon.....	Bureau of Labor Statistics and Inspection of Factories and Workshops.....	Commissioner.....	Salem, Oreg.
Pennsylvania.....	Bureau of Industrial Statistics.....	Chief.....	Harrisburg, Pa.
Rhode Island.....	Bureau of Labor Statistics.....	Commissioner.....	Providence, R. I.
Virginia.....	Bureau of Labor and Industrial Statistics.....	Commissioner.....	Richmond, Va.
Washington.....	Bureau of Labor.....	Commissioner.....	Olympia, Wash.
West Virginia.....	Bureau of Labor.....	Commissioner.....	Wheeling, W. Va.
Wisconsin.....	Bureau of Labor Statistics.....	Commissioner.....	Madison, Wis.
FOREIGN COUNTRIES.			
Argentina.....	Departamento Nacional del Trabajo.....	Presidente.....	Buenos Aires.
Austria.....	K. K. Arbeitsstatistisches Amt im Handelsministerium.....	Vorstand.....	Wien.
Belgium.....	Office du Travail (Ministère de l'Industrie et du Travail).....	Directeur Général.....	Bruxelles.
Canada.....	Department of Labor.....	Minister of Labor.....	Ottawa.
Canada: Ontario.....	Bureau of Labor (Department of Public Works).....	Secretary.....	Toronto.
Chile.....	Oficina de Estadística del Trabajo.....	Jefe.....	Santiago.
Finland.....	Industristatistisen (a).....	.....	Helsingfors.
France.....	Office du Travail (Ministère du Travail et de la Prévoyance Sociale).....	Directeur.....	Paris.
Germany.....	Kaiserliches Statistisches Amt, Abteilung für Arbeiterstatistik.....	Präsident.....	Berlin.
Great Britain and Ireland.....	Labor Department (Board of Trade).....	Commissioner of Labor.....	London (43 Parliament st.).
Italy.....	Ufficio del Lavoro (Ministero di Agricoltura Industria e Commercio).....	Direttore Generale.....	Rome.
Netherlands.....	Centraal Bureau voor de Statistiek (a).....	Directeur.....	's-Gravenhage.
New South Wales.....	State Labor Bureau.....	Director of Labor.....	Sydney.
New Zealand.....	Department of Labor.....	Minister of Labor.....	Wellington.
Spain.....	Instituto de Reformas Sociales.....	Secretario General.....	Madrid.
Sweden.....	Afdelning för Arbetsstatistik (Kgl. Kommerskollegiet).....	Direktör.....	Stockholm.
Switzerland.....	Secrétariat Ouvrier Suisse (semi-officiel).....	Secrétaire.....	Zürich.
Uruguay.....	Oficina del Trabajo (Ministero de Industrias, Trabajo e Instrucción Pública).....	.....	Montevideo.
International.....	International Labor Office.....	Director.....	Basle, Switzerland.

LEADING ARTICLES IN PAST NUMBERS OF THE BULLETIN.

- No. 1. Private and public debt in the United States, by George K. Holmes.^(a)
Employer and employee under the common law, by V. H. Olmsted and S. D. Fessenden.^(a)
- No. 2. The poor colonies of Holland, by J. Howard Gore, Ph. D.^(a)
The industrial revolution in Japan, by William Eleroy Curtis.^(a)
Notes concerning the money of the U. S. and other countries, by W. C. Hunt.^(a)
The wealth and receipts and expenses of the U. S., by W. M. Steuart.^(a)
- No. 3. Industrial communities: Coal Mining Co. of Anzin, by W. F. Willoughby.
- No. 4. Industrial communities: Coal Mining Co. of Blanzy, by W. F. Willoughby.^(a)
The sweating system, by Henry White.^(a)
- No. 5. Convict labor.
Industrial communities: Krupp Iron and Steel Works, by W. F. Willoughby.
- No. 6. Industrial communities: Familistère Society of Guise, by W. F. Willoughby.
Cooperative distribution, by Edward W. Bemis, Ph. D.
- No. 7. Industrial communities: Various communities, by W. F. Willoughby.^(a)
Rates of wages paid under public and private contract, by Ethelbert Stewart.^(a)
- No. 8. Conciliation and arbitration in the boot and shoe industry, by T. A. Carroll.^(a)
Railway relief department, by Emory R. Johnson, Ph. D.^(a)
- No. 9. The padrone system and padrone banks, by John Koren.^(a)
The Dutch Society for General Welfare, by J. Howard Gore, Ph. D.^(a)
- No. 10. Condition of the Negro in various cities.^(a)
Building and loan associations.^(a)
- No. 11. Workers at gainful occupations at censuses of 1870, 1880, and 1890, by W. C. Hunt.
Public baths in Europe, by Edward Mussey Hartwell, Ph. D., M. D.
- No. 12. The inspection of factories and workshops in the U. S., by W. F. Willoughby.^(a)
Mutual rights and duties of parents and children, guardianship, etc., under the law, by F. J. Stimson.^(a)
The municipal or cooperative restaurant of Grenoble, France, by C. O. Ward.^(a)
- No. 13. The anthracite mine laborers, by G. O. Virtue, Ph. D.^(a)
- No. 14. The Negroes of Farmville, Va.: A social study, by W. E. B. Du Bois, Ph. D.^(a)
Incomes, wages, and rents in Montreal, by Herbert Brown Ames, B. A.^(a)
- No. 15. Boarding homes and clubs for working women, by Mary S. Ferguson.^(a)
The trade union label, by John Graham Brooks.^(a)
- No. 16. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.
- No. 17. Brotherhood relief and insurance of railway employees, by E. R. Johnson, Ph. D.^(a)
The nations of Antwerp, by J. Howard Gore, Ph. D.^(a)
- No. 18. Wages in the United States and Europe, 1870 to 1898.^(a)
- No. 19. Alaskan gold fields and opportunities for capital and labor, by S. C. Dunham.^(a)
Mutual relief and benefit associations in the printing trade, by W. S. Waudby.^(a)
- No. 20. Conditions of railway labor in Europe, by Walter E. Weyl, Ph. D.
- No. 21. Pawnbroking in Europe and the United States, by W. R. Patterson, Ph. D.

- No. 22. Benefit features of American trade unions, by Edward W. Bemis, Ph. D.^(a)
The Negro in the black belt: Some social sketches, by W. E. B. Du Bois, Ph. D.^(a)
Wages in Lyon, France, 1870 to 1896.^(a)
- No. 23. Attitude of women's clubs, etc., toward social economics, by Ellen M. Henrotin.^(a)
The production of paper and pulp in the U. S., from January 1 to June 30, 1898.^(a)
- No. 24. Statistics of cities.^(a)
- No. 25. Foreign labor laws: Great Britain and France, by W. F. Willoughby.^(a)
- No. 26. Protection of workmen in their employment, by S. D. Fessenden.^(a)
Foreign labor laws: Belgium and Switzerland, by W. F. Willoughby.^(a)
- No. 27. Wholesale prices: 1890 to 1899, by Roland P. Falkner, Ph. D.^(a)
Foreign labor laws: Germany, by W. F. Willoughby.^(a)
- No. 28. Voluntary conciliation and arbitration in Great Britain, by J. B. McPherson.^(a)
System of adjusting wages, etc., in certain rolling mills, by J. H. Nutt.^(a)
Foreign labor laws: Austria, by W. F. Willoughby.^(a)
- No. 29. Trusts and industrial combinations, by J. W. Jenks, Ph. D.
The Yukon and Nome gold regions, by S. C. Dunham.
Labor Day, by Miss M. C. de Graffenried.
- No. 30. Trend of wages from 1891 to 1900.
Statistics of cities.
Foreign labor laws: Various European countries, by W. F. Willoughby.
- No. 31. Betterment of industrial conditions, by V. H. Olmstead.
Present status of employers' liability in the U. S., by S. D. Fessenden.
Condition of railway labor in Italy, by Dr. Luigi Einaudi.
- No. 32. Accidents to labor as regulated by law in the U. S., by W. F. Willoughby.
Prices of commodities and rates of wages in Manila.
The Negroes of Sandy Spring, Md.: A social study, by W. T. Thom, Ph. D.
The British workmen's compensation act and its operation, by A. M. Low.
- No. 33. Foreign labor laws: Australasia and Canada, by W. F. Willoughby.
The British conspiracy and protection of property act and its operation, by A. M. Low.
- No. 34. Labor conditions in Porto Rico, by Azel Ames, M. D.
Social economics at the Paris Exposition, by Prof. N. P. Gilman.
The workmen's compensation act of Holland.
- No. 35. Cooperative communities in the United States, by Rev. Alexander Kent.
The Negro landholder of Georgia, by W. E. B. Du Bois, Ph. D.
- No. 36. Statistics of cities.
Statistics of Honolulu, H. I.
- No. 37. Railway employees in the United States, by Samuel McCune Lindsay, Ph. D.^(a)
The Negroes of Litwalton, Va.: A social study of the "Oyster Negro," by William Taylor Thom, Ph. D. ^(a)
- No. 38. Labor conditions in Mexico, by Walter E. Weyl, Ph. D.
The Negroes of Cinclare Central Factory and Calumet Plantation, La., by J. Bradford Laws.
- No. 39. Course of wholesale prices, 1890 to 1901.
- No. 40. Present condition of the hand-working and domestic industries of Germany, by Henry J. Harris, Ph. D.
Workmen's compensation acts of foreign countries, by Adna F. Weber.
- No. 41. Labor conditions in Cuba, by Victor S. Clark, Ph. D.
Beef prices, by Fred C. Croxton.
- No. 42. Statistics of cities.^(a)
Labor conditions of Cuba.^(a)
- No. 43. Report to the President on anthracite coal strike, by Carroll D. Wright.^(a)
- No. 44. Factory sanitation and labor protection, by C. F. W. Doehring, Ph. D.
- No. 45. Course of wholesale prices, 1890 to 1902.
- No. 46. Report of Anthracite Coal Strike Commission.
- No. 47. Report of the Commissioner of Labor on Hawaii.
- No. 48. Farm colonies of the Salvation Army, by Commander Booth Tucker.
The Negroes of Xenia, Ohio, by Richard R. Wright, jr., B. D.

- No. 49. Cost of living.
Labor conditions in New Zealand, by Victor S. Clark, Ph. D.
- No. 50. Labor unions and British industry, by A. Maurice Low. (°)
Land values and ownership in Philadelphia, by A. F. Davies. (°)
- No. 51. Course of wholesale prices, 1890 to 1903.
The union movement among coal-mine workers, by Frank J. Warne, Ph. D.
- No. 52. Child labor in the United States, by Hannah R. Sewall, Ph. D.
- No. 53. Wages and cost of living.
- No. 54. The working of the United States Bureau of Labor, by Carroll D. Wright.
Bureaus of statistics of labor in the United States, by G. W. W. Hanger.
Bureaus of statistics of labor in foreign countries, by G. W. W. Hanger.
The value and influence of labor statistics, by Carroll D. Wright.
Strikes and lockouts in the United States, 1881 to 1900, by G. W. W. Hanger.
Wages in the United States and Europe, 1890 to 1903, by G. W. W. Hanger.
Cost of living and retail prices in the United States, 1890 to 1903, by G. W. W. Hanger.
Wholesale prices in the United States, 1890 to 1903, by G. W. W. Hanger.
Housing of the working people in the United States by employers, by G. W. W. Hanger.
Public baths in the United States, by G. W. W. Hanger.
Trade and technical education in the United States.
Hand and machine labor in the United States.
Labor legislation in the United States, by G. A. Weber.
Labor conditions in Hawaii.
- No. 55. Building and loan associations in the U. S., by G. W. W. Hanger. (°)
Revival of handicrafts in America, by Max West, Ph. D. (°)
- No. 56. Influence of trade unions on immigrants, by Carroll D. Wright.
Labor conditions in Australia, by Victor S. Clark, Ph. D.
- No. 57. Course of wholesale prices, 1890 to 1904.
Street railway employment in the United States, by Walter E. Weyl, Ph. D.
State cooperative accident insurance fund of Maryland.
- No. 58. Labor conditions in the Philippines, by Victor S. Clark, Ph. D.
Labor conditions in Java, by Victor S. Clark, Ph. D.
The new Russian workingmen's compensation act, by I. M. Rubinow.
- No. 59. Wages and hours of labor in manufacturing industries, 1890 to 1904.
Retail prices of food, 1890 to 1904.
Laws relating to child labor in European countries.
- No. 60. Government industrial arbitration, by Leonard W. Hatch, A. M.
- No. 61. Labor conditions in Porto Rico, by Walter E. Weyl, Ph. D. (°)
Early organizations of printers, by Ethelbert Stewart. (°)
- No. 62. Municipal ownership in Great Britain, by Frederic C. Howe, Ph. D. (°)
Conciliation in the stove industry, by John P. Frey and John R. Commons. (°)
Laws relating to the employment of children in the United States. (°)
- No. 63. Course of wholesale prices, 1890 to 1905.
- No. 64. Conditions of living among the poor, by S. E. Forman.
Benefit features of British trade unions, by Walter E. Weyl, Ph. D.
- No. 65. Wages and hours of labor in manufacturing industries, 1890 to 1905. (°)
Retail prices of food, 1890 to 1905. (°)
- No. 66. Third report of the Commissioner of Labor on Hawaii.
- No. 67. Conditions of entrance to the principal trades, by Walter E. Weyl, Ph. D., and A. M. Sakolski, Ph. D. (°)
Cost of industrial insurance in the District of Columbia, by S. E. Forman. (°)
- No. 68. Free public employment offices in the United States, by J. E. Conner, Ph. D. (°)
Laws of foreign countries relating to employees on railroads, by Lindley D. Clark, A. M., LL. M. (°)
- No. 69. Wholesale prices, 1890 to 1906.

- No. 70. The Italian on the land: A study in immigration, by Emily Fogg Meade.^(a)
A short history of labor legislation in Great Britain, by A. Maurice Low.^(a)
The British workmen's compensation acts, by Launcelot Packer, B. L.^(a)
- No. 71. Wages and hours of labor in manufacturing industries, 1890 to 1906.^(a)
Retail prices of food, 1890 to 1906.^(a)
- No. 72. Italian, Slavic, and Hungarian unskilled immigrant laborers in the United States, by Frank J. Sheridan.
Economic condition of the Jews in Russia, by I. M. Rubinow.
- No. 73. Laws relating to the employment of women and children.
Laws relating to factory inspection and the health and safety of employees.
- No. 74. The legal liability of employers for injuries to their employees in the United States, by Lindley D. Clark, A. M., LL. M.
Workmen's compensation acts of foreign countries.
- No. 75. Wholesale prices, 1890 to 1907.
Industrial hygiene, by George M. Kober, M. D.
- No. 76. The Canadian Industrial Disputes Investigation Act of 1907, by Victor S. Clark, Ph. D.
What is done for the unemployed in European countries, by W. D. P. Bliss.
- No. 77. Wages and hours of labor in manufacturing industries, 1890 to 1907.
Retail prices of food, 1890 to 1907.
Cost of living of the working classes in the principal industrial towns of Great Britain.
- No. 78. Industrial accidents, by Frederick L. Hoffman.
Mexican labor in the United States, by Victor S. Clark, Ph. D.
Cost of living of the working classes in the principal industrial towns of Germany.
- No. 79. Mortality from consumption in dusty trades, by Frederick L. Hoffman.
Charity relief and wage earnings, by S. E. Forman.

* Bulletin out of print.



Business School Library	
No.	657/197
Main Entry	
Cat. Cds.	280
Shelf Cds.	280
Acc. Bk.	715
Per. Cds.	
Cont. Cds.	

This book should be returned to
the Library on or before the last date
stamped below.

A fine of \$



